ENGINEERING NEWS-RECORD

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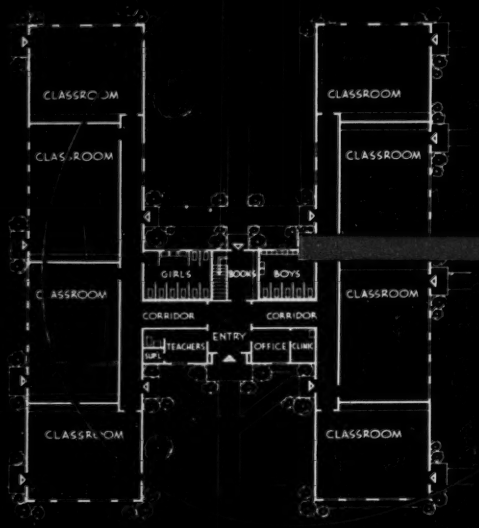

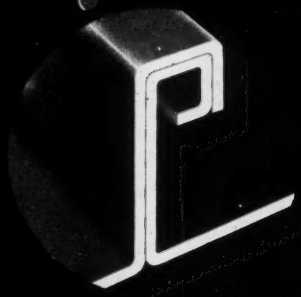

School building ~~costs~~ going up!

Now school buildings are going up instead of their costs—thanks to the patented Armco STEELOX Joint. Many school officials and architects have found that with STEELOX they could provide exactly the same interior facilities at savings up to 50 per cent over other type buildings.

Building ideas have also changed in industry and on the farm. With the revolutionary STEELOX method the jointed panels provide both structural support and a finished surface. For sidewalls they save framing and outside covering. On the roof, STEELOX panels replace rafters, sheathing and roofing. Erection is simplified, appearance improved, and weathertight construction assured. Unskilled workmen quickly join the panels into a low-cost, maintenance-free structure that is permanent yet has high salvage value.

Making products simpler, easier to handle and more efficient has been a prime goal at Armco for more than 40 years. So has the designing of products to meet specific needs. A few examples are FLEX-BEAM Guardrail, PIPE-ARCH, HEL-COR Perforated Pipe and sturdy MULTI-PLATE Bridges.

Today you can bring your drainage and construction problems to Armco with full assurance you will receive all the benefits of long experience, extensive research facilities, and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient, authoritative data to help you. If your problem is difficult or unusual, why not talk it over with us?

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

MIDDLETOWN, OHIO • OFFICES AND PLANTS IN PRINCIPAL CITIES
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OUR THANKS TO YOU...

Open Steel Flooring Institute, Inc.

On this day of March 11, 1952, we, the members of this Institute, do hereby present this scroll to

Walter E. Irving

Founder of the Open Steel Flooring Industry

Without his vision, resourcefulness and perseverance, the industry, as constituted today, may never have come into being.

We honor him for his pioneering and leadership and for his devotion during the past half century to an idea and an ideal.

Walter E. Irving first conceived of open mesh steel grating as the perfect flooring to walk on, to work on and to wheel on. He did more to make this a reality than any other one man.

These words express only in small part our respect, admiration and gratitude to the Father of Our Industry.

Vice President

Secretary

WE WISH TO OFFER OUR THANKS TO THE MEMBERS OF THE

OPEN STEEL FLOORING INDUSTRY

FOR THE SIGNAL HONOR BESTOWED UPON OUR FOUNDER

WALTER E. IRVING

ON THIS OUR

GOLDEN ANNIVERSARY

IRVING SUBWAY GRATING CO., INC.

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The newest and most modern instrument for surveyors and engineers. Its special innovations combine to make instrument operation
MORE RAPID,
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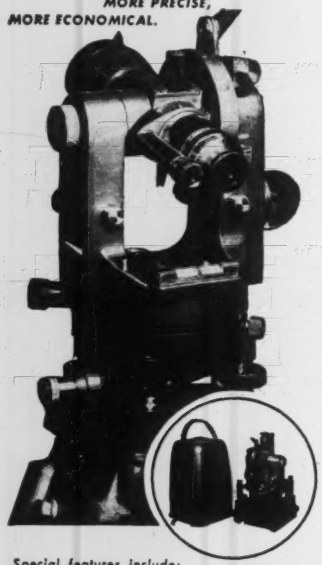

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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 148 MAY 22, 1952 No. 21

WALDO G. BOWMAN
Editor

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Number of copies of this issue printed, 53,499

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Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

May 22, 1952 ENGINEERING NEWS-RECORD Vol. 148—No. 21

Member ABC and ABP

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 North Broadway, Albany 1, N. Y.**

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions: Address correspondence to Engineering News-Record—Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow ten days for change of address.

Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. Position and company connection must be indicated on subscription orders.

Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada, $8.00 a year; $12.00 for two years; $16.00 for three years. Other Western Hemisphere countries, $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries, $20.00 a year; $30.00 for two years; $40.00 for three years. Entered as second class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of Mar. 3, 1879. Printed in U. S. A.
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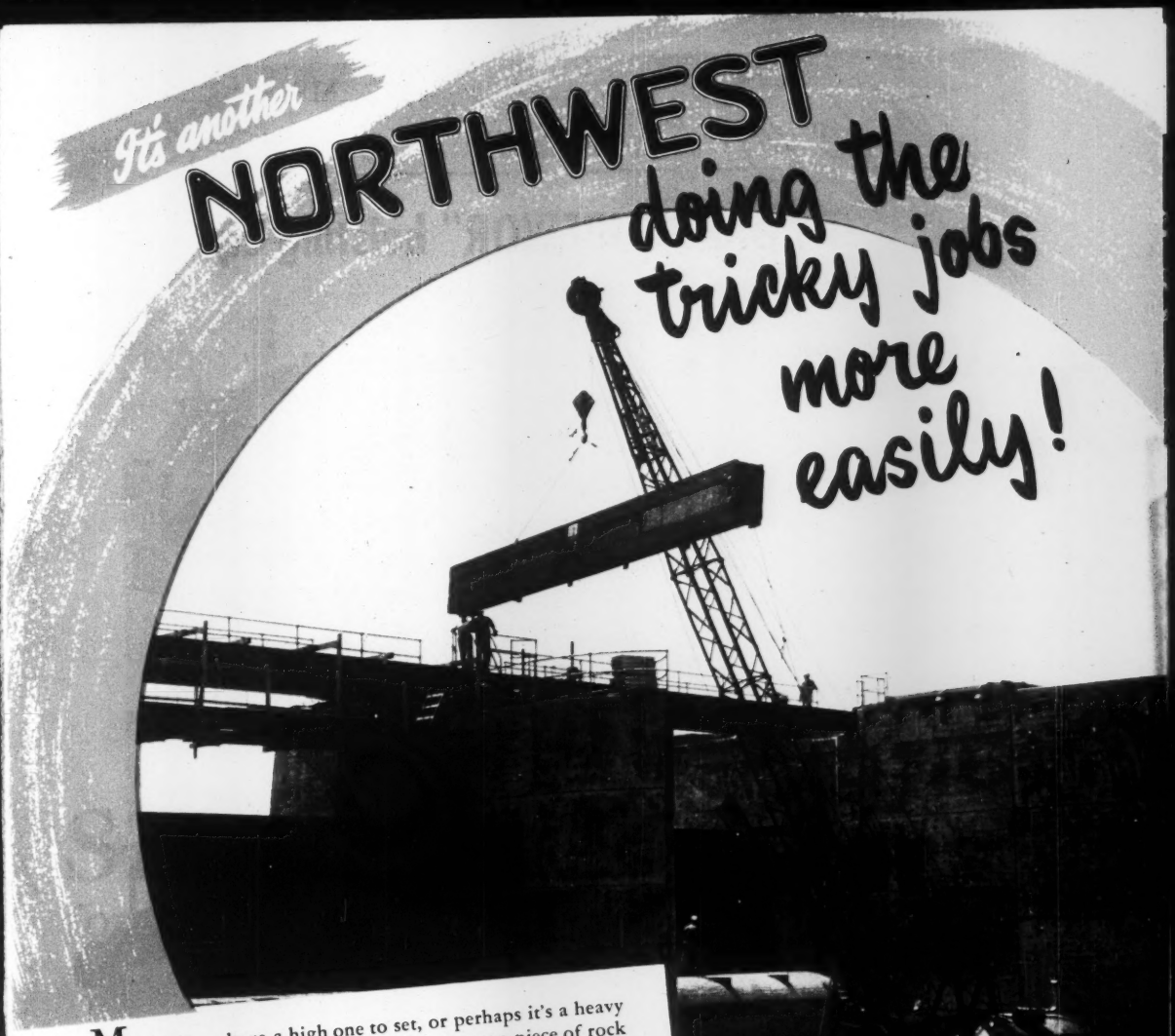

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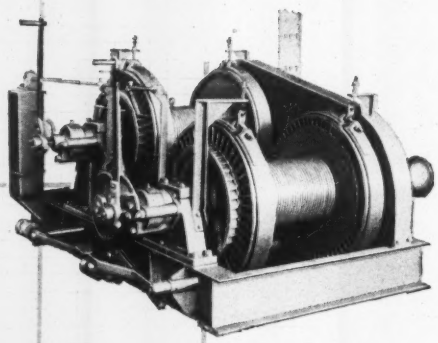

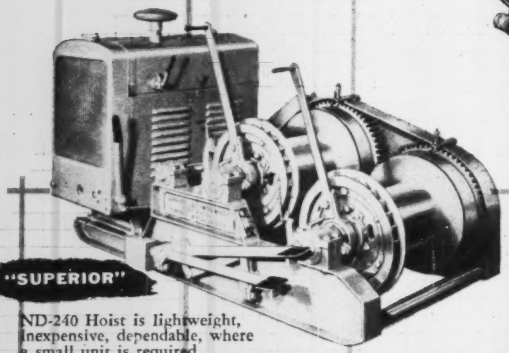

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ND-240 Hoist is lightweight, inexpensive, dependable, where a small unit is required. Duty 5000 lb at 150 fpm.

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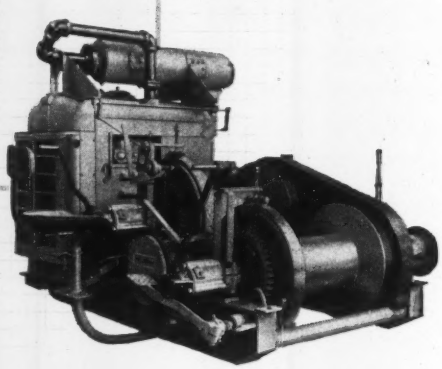

In addition to a complete line of standard hoists we also design and build hoists to meet your special requirements.

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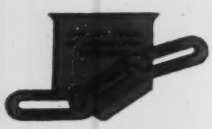

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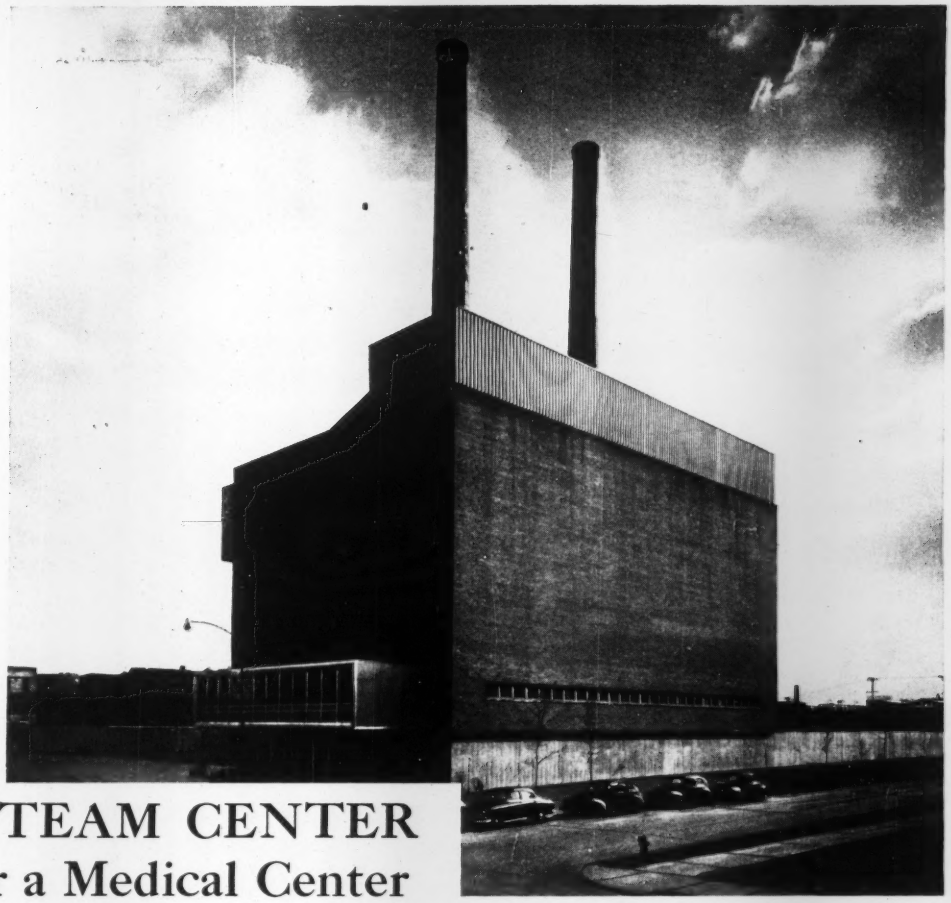
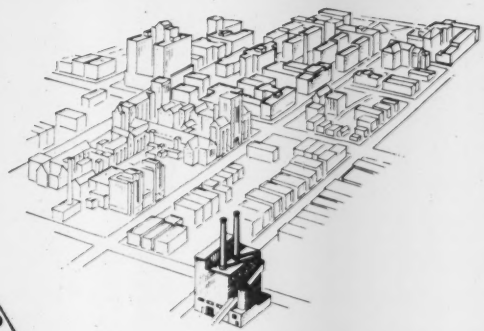


STEAM CENTER
for a Medical Center

The new steam center of the Medical Center Steam Company, serving the University of Illinois and others in the Medical Center Area in Chicago provides a single, economical and reliable source of steam for all buildings in the group.

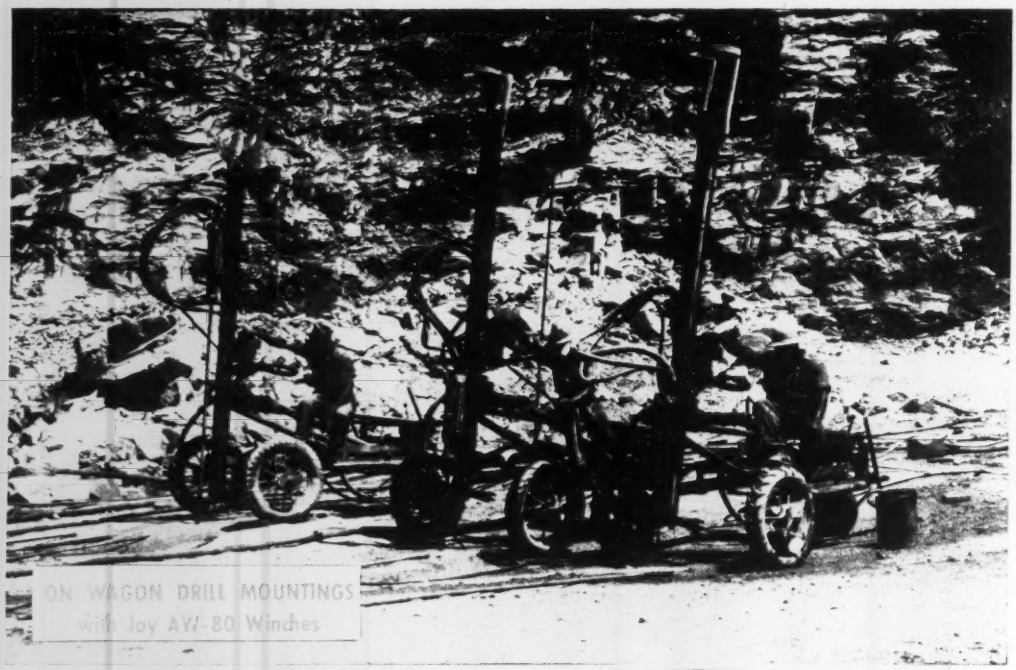
Three boilers, each with a capacity of 90,000 pounds per hour, distribute steam through underground pipes laid in 4600 feet of tunnels. Provision has been made for future expansion.

The steam plant and distribution system were designed and constructed by Stone & Webster Engineering Corporation.



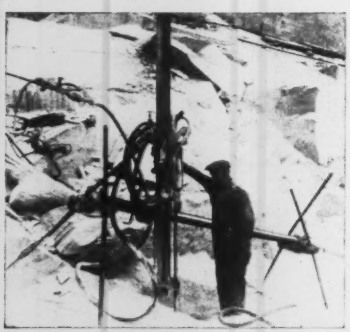
STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY *of* STONE & WEBSTER, INC.



ON WAGON DRILL MOUNTINGS
with Joy AW-80 Winches

Put JOY SILVER STREAK DRIFTERS TO WORK ON YOUR JOB—



ON QUARRY-BAR MOUNTING

Watch daily footage INCREASE and costs per foot go DOWN!

JOY Silver Streak Drifters feature the exclusive *Dual Valve* with positive cushion control. It gives a harder, more powerful punch—literally makes air do more work. What's more, JOY Drifters *last longer*—give you more feet of hole with less maintenance. Exclusive *cadmium plating*, inside and out, inhibits rust, prevents scoring during run-in, and at the same time, adds power by permitting closer piston tolerances. ● Ask for a trial demonstration on JOY Drifters—the T-300, T-350 or T-400—*prove their all-around superiority right on the job!*

Write for Bulletin, or

Consult a Joy Engineer

W&D R 2818

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

HERE'S WHAT ONE LEADING CONTRACTOR HAS TO SAY ABOUT FLEX-PLANE'S SUPER PORTABLE FINISHER . . .

DENTON CONSTRUCTION COMPANY
GENERAL MOTORS BUILDING
DETROIT 2, MICHIGAN

March 6,1952.

Mr. Donald T. Heltzel
General Manager
Flexible Road Joint Machine Company
Warren, Ohio.

Dear Sir:

We have been using two of your "Detroit Special" finishing machines on numerous projects in and around the City of Detroit for the past two years. Our overall experience with these machines has been very satisfactory. Following are some of the advantages we have found.

(a) Most important is the increased production due to higher rate of travel and screed action.

(b) The hydraulically operated moving mechanism reduced our job to job moving time to an absolute minimum.

(c) Changing width of machine and screeds for various pavement designs is accomplished readily due to built-in features which facilitate same.

(d) Balance and flexibility has proved to be excellent. On one test track job, a 200 ft. radius curve with 42 inch super-elevation in 12 feet was negotiated without difficulty and handling "no slump" concrete at the same time. In this case we attribute such performance in part, to the very fine turning clutches.

(e) Strength has not been sacrificed although total weight has been reduced sufficiently to permit operation on 13 inch light-construction forms and integral curb work.

(f) Power-plant, clutches, gear boxes and hydraulic controls perform perfectly and reflect superior design and construction.

(g) Last but not least is the low maintenance experience we have enjoyed, plus a definite attitude on the part of the manufacturer to "serve-after-sale".

Obviously the sum total of these factors mean dollars and cents in any owners' pocket.

Sincerely yours,

DENTON CONSTRUCTION COMPANY

By C.C. Leduman
C.C. Leduman - Genl Supt.

CCL:FT
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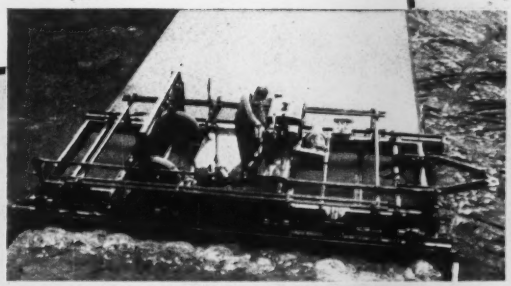

The Detroit Special Portable Finishing Machine is the most mobile, sturdiest, easiest-to-use — most profitable finisher on the forms today. In many cases the Special has completely paid for itself on the first job. Get all the information. We'll be happy to furnish you with bulletins or movies, arrange interviews with owners, give you full technical assistance and engineering help.

Just write to **Detroit Special, Flexible Road Joint Machine Co., Warren, Ohio.**

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The Flexible Road Joint Machine Co.

WARREN, OHIO

Construction Equipment Since 1910

Heltzel

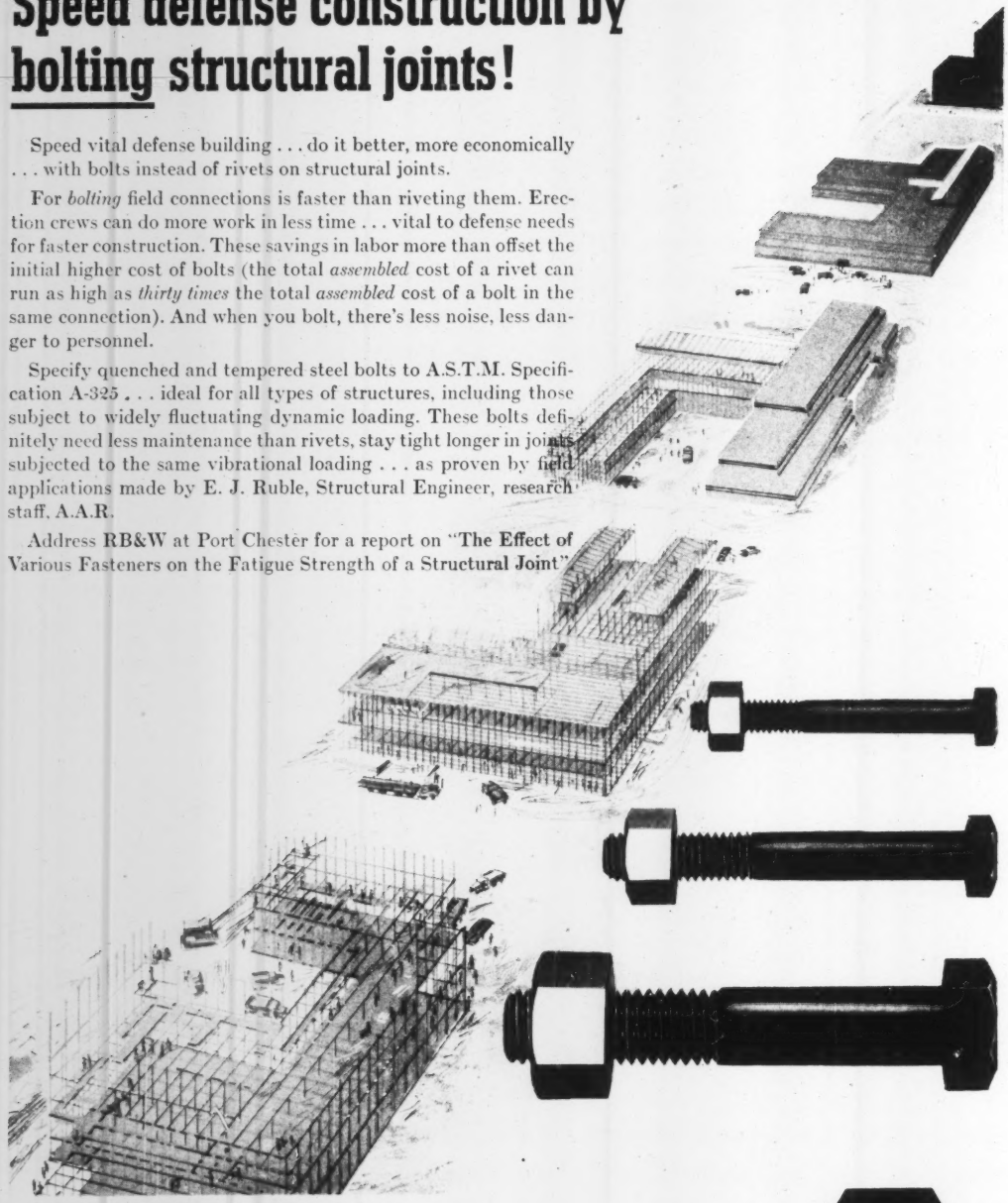
Speed defense construction by bolting structural joints!

Speed vital defense building . . . do it better, more economically . . . with bolts instead of rivets on structural joints.

For *bolting* field connections is faster than riveting them. Erection crews can do more work in less time . . . vital to defense needs for faster construction. These savings in labor more than offset the initial higher cost of bolts (the total *assembled* cost of a rivet can run as high as *thirty times* the total *assembled* cost of a bolt in the same connection). And when you bolt, there's less noise, less danger to personnel.

Specify quenched and tempered steel bolts to A.S.T.M. Specification A-325 . . . ideal for all types of structures, including those subject to widely fluctuating dynamic loading. These bolts definitely need less maintenance than rivets, stay tight longer in joints subjected to the same vibrational loading . . . as proven by field applications made by E. J. Ruble, Structural Engineer, research staff, A.A.R.

Address RB&W at Port Chester for a report on "**The Effect of Various Fasteners on the Fatigue Strength of a Structural Joint**"



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With Rex® Pumpcrete®—concrete by pipe line—you have a real pipe line to lower costs—and hence higher profits. It's the pipe line *flexibility* that makes Pumpcrete the ideal method of concrete placement on so many large building construction jobs. Just spot the Pumpcrete in the one most advantageous position and extend the pipe line to the desired placement positions.

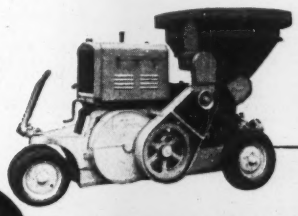
YOU SAVE FOUR WAYS:

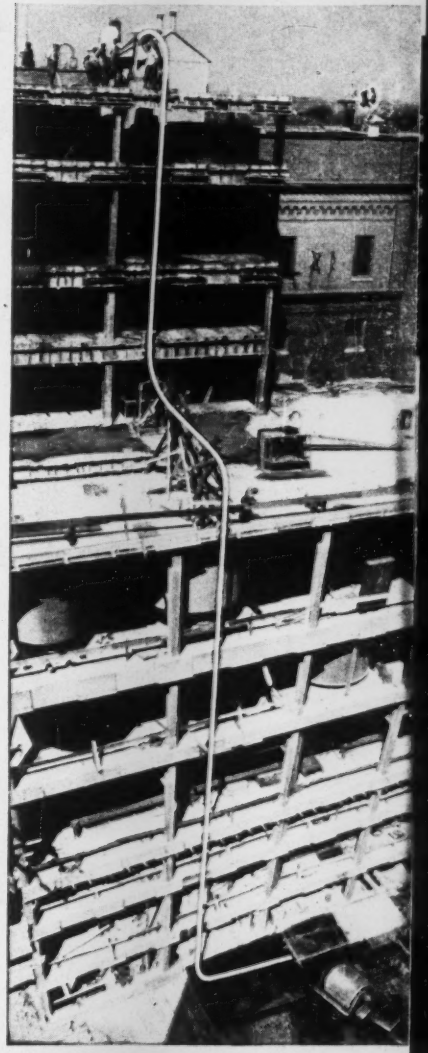
FOURTH **YOU REDUCE NON-PRODUCTIVE MOVING TIME** With Pumpcrete you don't waste time and money moving mixing equipment from place to place. Just spot Pumpcrete in the one most advantageous location. No buggies, buggy runs or other heavy equipment to move. With Pumpcrete, you move placing equipment from floor to floor in as little as 15 minutes.

THIRD **YOU REDUCE "DEAD TIME"** With Pumpcrete, you place concrete while carpenters, form setters, electricians, plumbers are at work. Concrete is delivered steadily where and when you want it without interference.

SECOND **YOU REDUCE PREPARATORY COSTS** Pumpcrete and pipe line flexibility eliminate trestling, scaffolding, towers, expensive buggy runs and their costly re-handling.

FIRST **YOU REDUCE DIRECT LABOR COSTS** With Pumpcrete you transport, elevate and place concrete in one operation. No buggying is needed.





Nine stories high . . . 160 feet up! That's how high the Rex Pumpcrete lifted the concrete on this building job. Pumpcrete is ideal for pouring floors on buildings many stories high. As one floor is completed, the pipe line is extended to the next in as little as 15 minutes.

No matter how small or how large the area of each individual floor, pipe line flexibility pays off for you. For the complete story on how you can put up buildings for less with Rex Pumpcrete, see your local Rex Distributor or write to:

CHAIN BELT REX COMPANY ®

CONSTRUCTION MACHINERY

Chain Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wis.

A FAIR OFFER

If you will put a Jenkins Valve, recommended for your particular service, on the worst place you can find — where you cannot keep other valves tight — and if it is not perfectly tight or it does not hold steam, oil, acids, water or other fluids longer than any other valve, you may return it and your money will be refunded.

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LOOK FOR THE DIAMOND MARK

SINCE 1864 TRADE JENKINS MARK

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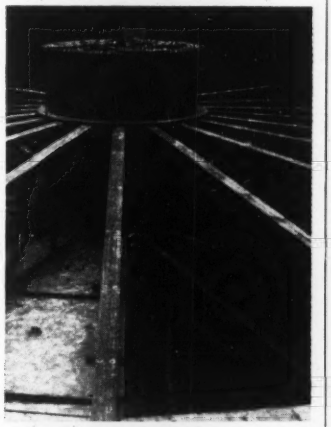
Despite their *extra value,* proved by countless economy records in every type of service, *you pay no more* for Jenkins Valves. Jenkins Bros., 100 Park Ave., New York 17.

READER COMMENT



FLOATING COVER CENTER rests on concrete tower when not floating.

Digester cover support

Sir: The Oct. 18, 1951, issue of ENGINEERING NEWS-RECORD carried description of a flotation method used in erecting floating sewage digester covers at Oakland, Calif. Design and erection of similar 90-ft covers for the Portland, Ore., plant may be of interest.

Floating digester covers were originally patented by Downes, and the structural design has for years followed essentially the details shown in the original patent application, with a central cylinder and gas dome, radial trusses, and a skirt supported in its lower position by a ledge or brackets on the concrete tank walls. In other words, with the tank empty the cover spans from wall to wall; when floating the cover is supported on the lower skin plate as a boat and the structural framework serves only to give it rigidity.

Designers of the Portland plant were intrigued by the possibility of reducing stresses and lightening the trusses if a central as well as a rim support be provided for the cover in its down position. Such a design made necessary a central tower, which in this case was a four legged concrete frame with portal bracing. This tower, of course added to the total cost and offset to a certain extent the saving in weight of the steel framework. However, the tower did serve a dual purpose in providing support for various pipes and appurtenances which would have to be supported in some manner in any case. Conclusions were that for the Portland job there was little differ-

(Continued on p. 14)

introducing the...

"One Armed Bandit" that pays off...

MODEL H SCOOPMOBILE
FULL HYDRAULIC
FRONT END LOADER

Shovel, Load and Transport
All Types of Bulk Material

The Model H SCOOPMOBILE with full hydraulic steering lift and bucket control is an outstanding material handler. Built for hard work, it gives top performance under all conditions. Planetary drive with 3-to-1 reduction ratio gives dependable power for all operations. Conveniently located finger-tip controls give the operator in cab full-vision command of every movement. Vickers hydraulic power steering gives positive control and lessens operator fatigue.

The versatile Model H SCOOPMOBILE with ¾ cu. yd. scoop has rated lifting capacity of 4,000 pounds and standard dumping height of 8 feet. Quick-change attachments include swivel-type concrete hopper, lift forks, special fertilizer or hay fork, and crane boom...and make the Model H SCOOPMOBILE an efficient multi-purpose unit.

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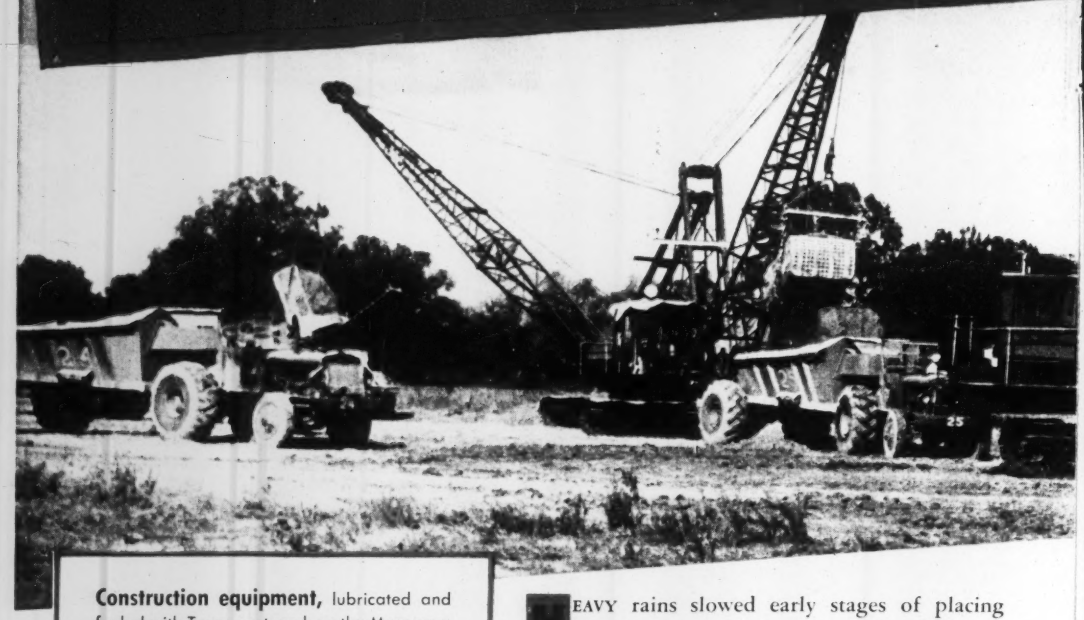
"TEXACO URSA OIL X** OUR DAM WORK



Construction equipment, lubricated and fueled with Texaco, at work on the Morganza embankment, part of the flood control program on the lower Mississippi. Joint contractors are Edward E. Morgan Co., Inc., and Jones & Gillis, Inc. Dirt-moving operations, started in June, 1949, call for placing 3,985,000 cubic yards of semicompacted embankment. Equipment includes 4 draglines, 9 tractors and 53 trucks — all of which are lubricated with Texaco exclusively.

HEAVY rains slowed early stages of placing nearly four million cubic yards of embankment for the Morganza Control Structure. Construction machinery was idled for days at a time. This made it vital that, when work could be resumed, there be no delays due to equipment failure.

"Diesel engines in all our earth-movers," report the contractors, "were lubricated with *Texaco Ursa Oil X***. They ran perfectly even under the severe conditions often imposed. We found, on this as on other jobs, that *Texaco Ursa Oil X*** is a big help

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.

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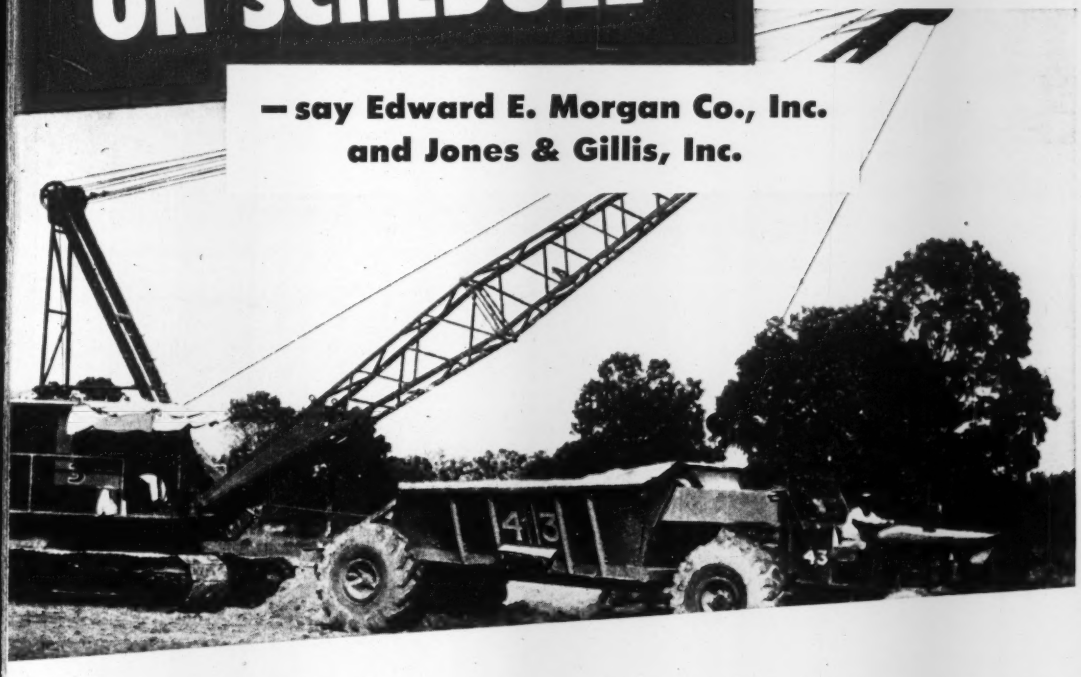
HELPS US KEEP ON SCHEDULE"

— say Edward E. Morgan Co., Inc. and Jones & Gillis, Inc.



in reducing fuel consumption and keeping maintenance costs low."

*Texaco Ursa Oil X*** cleans as it lubricates. Its fully detergent and dispersive properties keep harmful carbon, sludge and gum from forming. Better compression and combustion result, wear is reduced, bearings are protected against corrosion. Engines run better; parts last longer.

Let a Texaco Lubrication Engineer tell you more about *Texaco Ursa Oil X*** and how you can reduce your costs with the Texaco Simplified Lubrication Plan. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Make Savings Here, Too — Chassis parts last longer when protected by *Texaco Marfak*. This supper-tough lubricant guards against wear and rust in the most severe service. *More than 400 million pounds of Marfak have been sold.*

Wheel bearing maintenance cost is less when you use *Texaco Marfak Heavy Duty*. It seals itself in, seals out dirt and moisture. No seasonal change required.

Crawler track bearings give long, trouble-free service when lubricated with *Texaco Track Roll Lubricant*. Protects against wear, dirt and moisture.

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It's easy dozing with Baker, Allis-Chalmers matched equipment—either for dozing, gradebuilding or ripping roots and rocks.

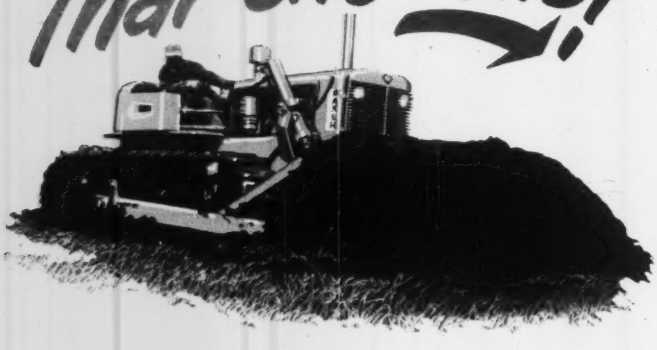
The "move-more-dirt" curve of Baker's famous involute blades, added to the design feature which puts the tractor weight on the cutting edge, leaves maximum power for push. These Baker features help make the Baker, A-C team the most maneuverable—the most easily operated, and thus by far the most *productive* of all earth moving equipment.

Don't settle for anything less than Baker, A-C! See your Baker, A-C dealer. Get on the bandwagon and see for yourself—

THE BAKER MANUFACTURING CO.
Springfield, Illinois

Wherever you see the Baker, A-C team at work, you see action like that pictured above, in photos of a conservation job near Lanark, Illinois. It's an Allis-Chalmers HD-9 with Baker Bulldozer.

Thar she rolls!



P. S. Have you seen the new 9-X no push beam dozer?

(Continued from p. 11)

ence in cost. For larger covers, the central support offered a saving and for smaller covers the rim support alone is cheaper.

During erection of these covers an advantage developed that was not originally considered. The central cylinder, which was delivered on the job as a unit, was first set in place on the concrete tower by means of a crane. The skirt sections were next placed on the brackets and bolted up. It was then possible to set the trusses in place, one by one, without any falsework whatsoever. The lower skin plates rested on the lower flanges of the trusses until welded up.

The enclosed picture shows the central concrete tower with bracing and some of the pipes for which it gives support, the dome cylinder and the trusses.

The Portland digester system consists of three 90-ft floating covers and one 90-ft gas-holder cover of the general type commonly used in the gas industry with a dome and external guide columns. The design of the floating covers, gas holder covers, and other features of the Portland Sewerage Project was by a joint venture of two engineering firms; John W. Cunningham & Associates and Stevens & Koon. There were five bidders for the floating covers, all of them steel frabricators and erectors. The successful bidder, also doing the erecting, was Consolidated Western Steel Corporation of South San Francisco, Calif.

JOHN W. CUNNINGHAM
John W. Cunningham & Associates
Portland, Ore.

Old contracting firms

Sir: I note the inquiry (ENR April 24, 1952, p. 14) as to whether any other contracting concern has been in operation longer than H. Wales Lines Co., Meriden, Conn., which was established in 1864.

This company is certainly among the old-timers, but our records indicate there are still in existence some which have been operating in one form or another over even longer periods. Without making any extensive search of the files, these can be mentioned:

Mason & Hanger, Inc. (N. Y.)	1827
William L. Crow Constr. Co. (N. Y.)	1840
C. W. Blakeslee & Sons, Inc. (Conn.)	1844
Jas. Stewart, Inc. (N. Y.)	1844
B. G. Coon Constr. Co. (Pa.)	1848
Pacific Bridge Co. (Calif.)	1869

W. D. DEAN
General Manager
Bureau of Contract Information
Washington, D. C.

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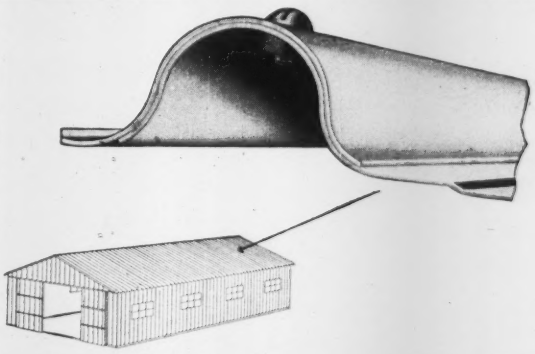
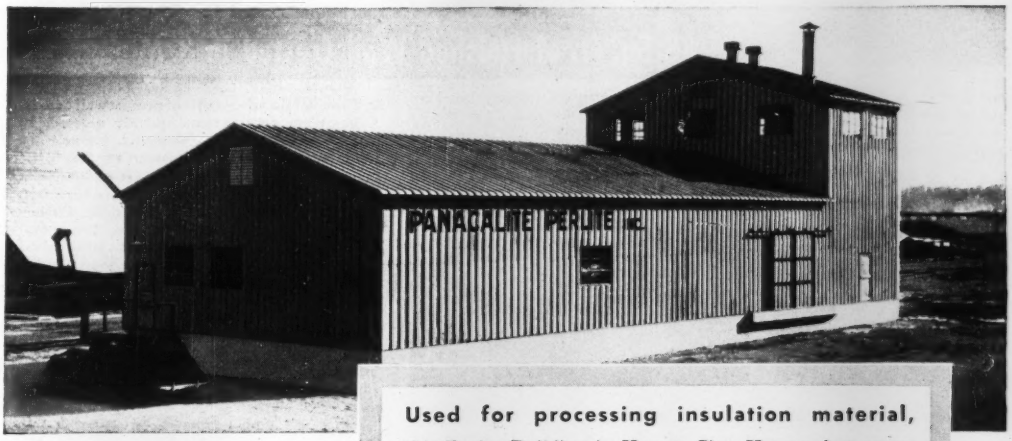
SHEET LAPS OF BUTLER BUILDINGS remain secure and weathertight because deeper corrugations add strength and decrease deflection under heavy snow and wind loads. Deep corrugations eliminate water overflow where sheet laps, protect interiors and merchandise against storm damage. And Butler Buildings have *many other special features* . . . features that make them adaptable to practically any kind of new construction or expansion.





Used for processing insulation material, this Butler Building in Kansas City, Kansas, has corrugated sheet covering. Those specially corrugated Butler sheets help assure an extra-strong, weathertough industrial building. Note added height at rear.

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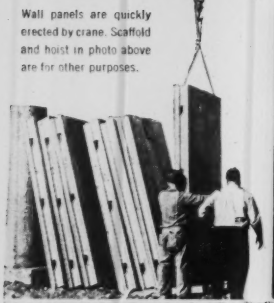
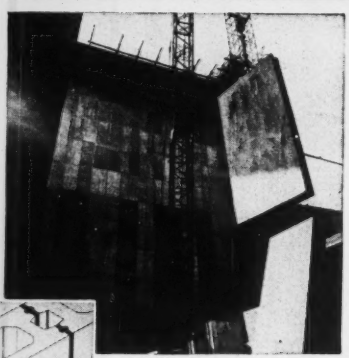
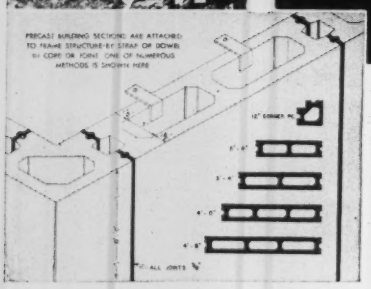


Wall panels are quickly erected by crane. Scaffold and hoist in photo above are for other purposes.




PRECAST BUILDING SECTIONS ARE ATTACHED TO FRAME STRUCTURE BY STRAP OR DOWEL IN CORE OR JOINT. ONE OF NUMEROUS METHODS IS SHOWN HERE

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Power House Addition
South Amboy, N.J.

Engineers and General Contractor:
BURNS & ROE, INC., New York

Wall Panels Manufactured and Installed by:
PRECAST BUILDING SECTIONS, INC.
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● Consider the advantages of precast wall panels: A complete wall system, quickly erected, in story-high sections . . . insulating, fire-safe . . . joints equal in strength and watertightness to the panels themselves . . . a wall requiring no finish.

Precast Building Sections were used for 8,000 sq. ft. of wall, for this 140-ft.-high Power-House addition . . . an all-purpose, one operation wall system . . . each 48-sq.-ft. panel lifted into place in 8 minutes . . . a finished wall as attractive as high quality cut stone.

Panels are produced in a range of sizes, for flexibility in architectural treatment and economy in construction. Lightweight aggregate, hollow-core design, and strong, dense concrete assure high insulating value and utmost fire-safety. Walls erected in 1912 are in first-class condition today.

Units are mass-produced by assembly-line methods, under rigid quality control. Air-entrained 'INCOR'* 24-HOUR CEMENT concrete is used: (1) extra plasticity expedites filling of 1½" space in heavy steel forms; (2) dependable high early strength permits stripping after initial 40 minutes' high-temperature curing . . . 6 to 8 daily uses of each form.

Tomorrow's wall today . . . shop-produced, flexible, ready-to-assemble . . . uniform, attractive appearance . . . result of engineering imagination and production know-how, with an assist from America's FIRST high-early-strength portland cement. *Reg. U. S. Pat. Off.

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PRESSURE BUILDS AGAINST HOUSING CONTROLS

The pressure being brought to bear on the government for easing controls on housing construction might be producing results. Indications this week were that there'd be some action to change the amount of down payment required.

And any changes were certain to bring new money into the housing field.

• **Opposing forces**—Two groups, with widely divergent viewpoints and objectives were bringing the pressure, although success for either camp would help the other.

The pressure was led by the homebuilders, bankers and financiers.

The homebuilders want the down payment requirements of Regulation X cut.

The bankers want a higher interest rate on VA (now 4%) and FHA (now 4½%) mortgage loans.

The homebuilders weren't happy about the bankers' objective—a combination of low down payments and low interest rates works to their advantage. The bankers weren't much interested in the down payment angle—although lower down payments would appear to make for a bigger mortgage market. But they don't want a bigger market without more interest.

• **Bankers' push**—The financial fraternity pushed hard for its point. At almost every national association meeting, such as the Mortgage Bankers Association (ENR April 24, p. 137) and again last week at the meeting of the National Savings and Loan League, they made this point to anyone who would listen:

The spread between what they are paying for money and what they are getting as interest on it is narrowing uncomfortably.

Lending institutions today are paying anywhere from 1½% to 3% to their depositors and to other lending agencies for money. On a VA-approved GI loan, they are permitted only 4% as interest. The difference of about 1% is largely eaten up by cost of administering and servicing the loans. Result: Little or no profit to the banks on their loans, possibility of loss because the margin is too thin.

With this argument in mind, the persistent reports that mortgage money for VA and FHA loans is tight in many areas makes some sense: The bankers are reluctant to commit themselves too heavily in this field.

And with a new "GI Bill" for Korea veterans going through the congressional mill this week, the question of availability becomes even more important.

• **Builders' push**—Led by the National Association of Home Builders, the housing group has kept up a steady drumfire of protest against Reg. X. Their point is that the lower-income home buyer is being discriminated against by requirements of heavy down payments—that in fact many a lower income family (though able to afford comfortable day-to-day living) is completely cut out of the market because it cannot muster the necessary cash.

With prospects of steady easing of controls on materials, and housing already moving at a million-unit clip, the builders are worried that for the first time in years they may wind up a season with unsold housing on their hands.

Suggestions for remedies (other than a change in Reg. X) have included one in New York State that the state step in to finance an additional $4,000 of loans to veterans at 2% (above the GI guarantee).

• **Results?**—Results of the campaigns are less than 50-50 to date, but Housing Administrator Raymond Foley told Savings and Loan League members last week that his agency is "considering" changes in Reg. X.

As to the interest rates, there is no official indication that the government will retreat from the present rates—both Franklin Richards HHFA chieftain, and T. B. King, director of VA's Loan Guarantee Section, had said only a week ago that there wasn't any chance of a change.

But the bankers looked hopefully at the signs of weakening on down payments, kept up their efforts in the hope the weakening would extend to their own desires.

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Do you use wire rope? Your nearby Ryerson plant is a convenient source for wire rope of every type, for every application. Hoisting, hauling and guy rope, tiller rope, bright and galvanized, preformed and non-preformed, fiber or wire center rope—all these are available, and many others, in a wide range of sizes and constructions. And you'll get the rope you need *fast* from Ryerson whether you order it by the foot or by the reel.

Our wire rope is made by companies famous for the high quality and dependability of their products. Each Ryerson plant can furnish the rope of one or more of these firms—American Steel & Wire, Bethlehem Steel and Roebling. In addition to the rope you need we can also furnish wire rope slings and all types of rope and sling fittings.

An engineer specializing in wire rope applications will gladly help you select from stocks on hand the right specification for your particular need—or have it custom made for you. So for complete wire rope service, get in touch with your nearby Ryerson plant.

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Also Available for Prompt Shipment

For heavy-duty work many shops find that "Taylor Made" alloy chain slings last many times longer than dredge iron slings. And this dependable chain is readily available from Ryerson. One reason for its longer life: Its tensile strength of 125-135,000 lbs. after heat treatment is almost 3 times that of dredge iron chain. Another: The stubby, narrow links of TM slings reduce gouging and deforming to a minimum even around sharp corners. And TM alloy chain has twice the safe working load of low carbon or wrought iron chain. Write us for complete data.

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THE CONSTRUCTION WEEK

FLOOD THREAT—Following completion of runoff surveys by the Corps of Engineers, Bureau of Reclamation and Utah's State Engineer, watermasters at four major Utah reservoirs last week were ordered to release some of their impounded waters to ease further flood threats. The action was highly unusual for semi-arid Utah. The state has ample legislation for water conservation, but officials could find no specific provision for "wasting" water. The state land board finally ordered spillways and floodgates opened under provisions of 20-year-old statute permitting it to take actions on safety measures "such as it may deem necessary." Sufficient water was released from Deer Creek Reservoir to leave 2,500 cfs moving through the narrow natural watercourse of the Provo River through the city of Provo and into Utah Lake. Utah Lake is 2.7 ft above its compromise level and rising one-tenth ft daily. At this rate, it is expected to flood farmlands and top the Provo airport site by May 25. Meantime water coming down the Jordan River from Utah Lake is hampering flood control work in Salt Lake City. Present figures indicate some $1.5 million damage to homes and industries in Salt Lake City and other communities, plus $500,000 in farm damage.

FALLBROOK CASE SETTLED—Without an opposing vote the House last week passed a vital bill to settle the Fallbrook water rights dispute in California (ENR May 8, p. 26). The bill authorizes construction of a $23-million earth-fill dam on the Santa Margarita River. It also enjoins federal officials and employees henceforth to obey state water laws and respect state water rights. The U. S. government had started a suit to get title to water rights in the Fallbrook area of San Diego County, which would have involved almost every family living in the area drawing on the Santa Margarita River for water supply and irrigation. It claimed the rights went with land purchased from Camp Joseph R. Pendleton Marine Base, where supplies are now inadequate. The suit will be dropped.

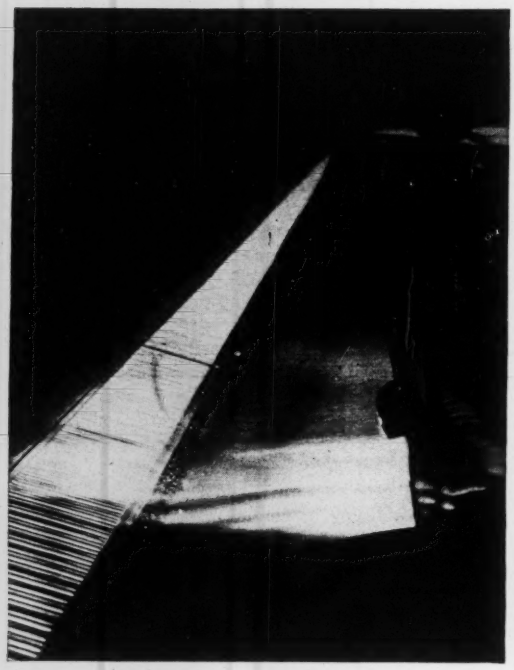
NEW ORE PROCESS—American Cyanamid last week announced "revolutionary processes" for metal ore refinement. They involve chemical leaching of metals from ores, yielding pure powders. Some low-grade ores previously untouched can be treated economically. The possibility is suggested that compact "refineries" could replace great smelters and even the bulky blast furnaces for iron. It would look like a big source of new construction may be opening. Mining experts, however, are dubious. They say that for non-ferrous metals, the new process may supplant the old gradually during the next ten years. Such a revolution in the iron and steel industry is much less imminent.

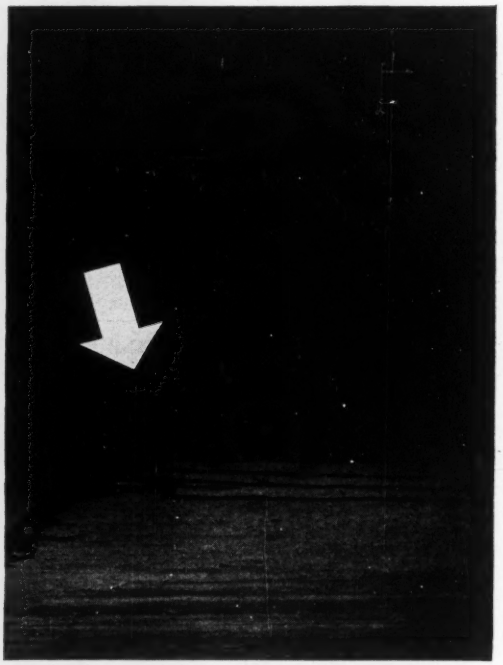
For cost and volume index see page 123.

IN THIS ISSUE—Let's take a fresh look at contractor licensing laws (p. 21) . . . An orphan bridge looks for an owner (p. 24) . . . Waffle block roof collapses again (p. 25) . . . Ground is broken for Gavins Point Dam (p. 26) . . . Levitt in the fight of his career with unions (p. 28) . . . Graft is uprooted in Philadelphia (p. 34) . . . Factories are now being mass-produced (p. 54) . . . Engineered health begins at home (p. 58) . . . South's Atlantic ports bristle with new construction (p. 60) . . . Asphalt paving on A-bomb island (p. 70) . . . Engineer recruiting plans mapped (p. 72) . . . Hot highway dispute gets some new answers (p. 80) . . . American engineers advise French on high earth dam (p. 98) . . . Big builders gain most in shift to industrial construction, and other business developments (p. 119) . . . Optical planimeter simplifies area measurements (p. 136) . . . Editorials (p. 148).

Which curb would you specify

. . . to alert a night-driver's eyes





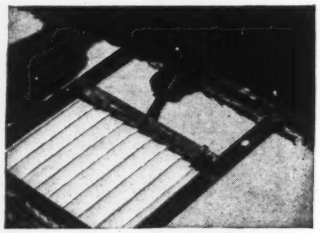
The picture at left shows a corrugated light-reflecting concrete curb made with Atlas White Cement. You can see it is bright and visible in the headlight rays. On a rainy night, the reflection would be even greater, for wetness makes the faces of the corrugations even more mirror-like.

The curb to the right is another story. Its *smooth* grey surface blends visually with the dimness of the roadway and shoulder. When doused with water (to simulate rain-wet; note arrow), it becomes darker, even harder to see.

No wonder safety-conscious engineers are turning to Atlas White Concrete Reflecting Curb. It makes driving safer —day, night, fair weather or foul. And it helps reduce the strain and fatigue of night driving.

Placement of Reflecting Curb is fast and simple. One method is to pour Atlas White Duraplastic* mortar mix on a grey cement base, screed to 1-inch thickness, and score with a hand tool (pictured right). Contractors prefer Duraplastic because its air-entrainment feature makes the mix more workable, more plastic; makes placement and scoring easy.

For more information write: Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.



*"*Duraplastic*" *is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.*

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For Concrete Reflecting Curb and Markers

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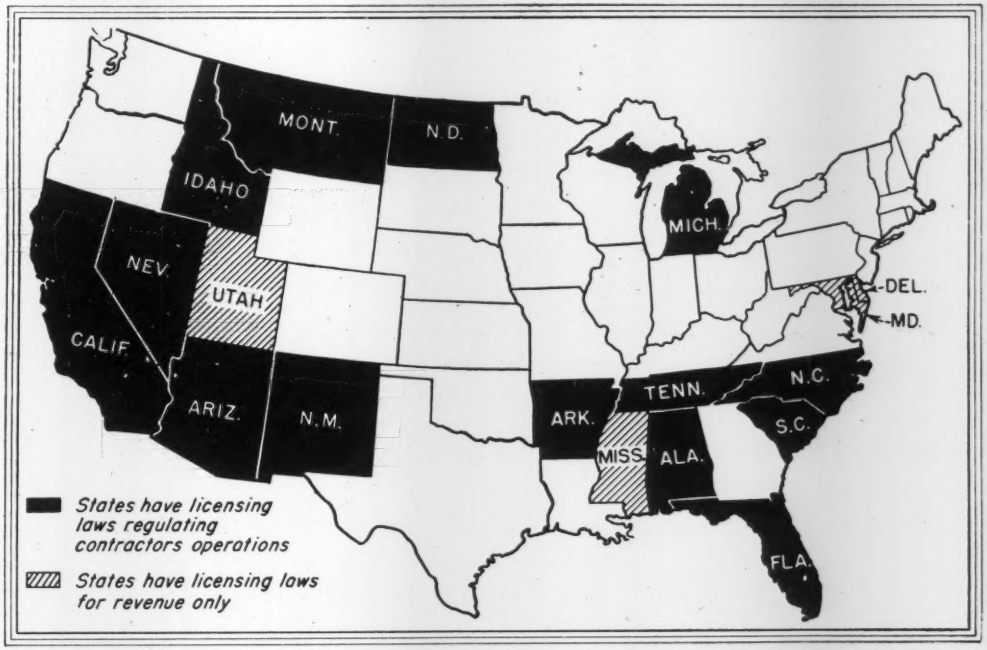
"THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*



Should contractors be licensed?

"Yes!" say 18 states; "Maybe" say others, as perennial controversy flares. Here is the picture today—

ENR Staff Report

"Before you get a contract, you'd better get a license." That's the basic rule in 18 states today—and it is still spreading.

Just last year, two more states, Florida and Arizona, enacted contractors' licensing laws. Nearly 33% of contractors doing more than $100,000 in volume last year worked on projects in states with licensing laws.

Last year, these 18 states with contractor licensing laws, accounted for more than $4 billion in contract awards out of $13.6 billion reported by ENGINEERING NEWS RECORD. This total is impressive because few states in the New England, the Middle Atlantic, and Midwest regions have started licensing.

Contractors' licensing has been a controversial issue ever since Maryland touched off the fireworks in 1916 with a law requiring state licensing of contractors for highway work.

• **Who's behind the licensing?**—The Associated General Contractors—at the national level—have not taken a position on contractor's licensing in the past. Top AGC officials are staying neutral now. The reason is that AGC members who do a nation-wide business are generally opposed to licensing—but local chapters of the AGC and other contractors' groups have been the prime movers in getting these laws on the books.

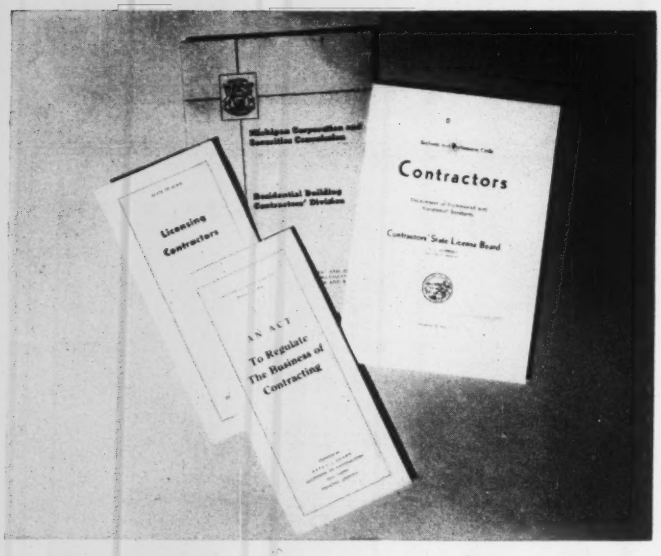
And, in states which now have licensing laws, it is often the local contractors' group that wants even tighter regulations by the state.

An example of this is Montana, where two chapters of the AGC, the Montana Building Chapter and the Montana Contractors Association, are studying laws of other states, in an effort to draft a tougher contractors' law for the next legislature.

"We definitely want to change the law to make it more effective. The contractors want something with more teeth in it," according to Jack Marlow, state secretary-manager of the AGC.

"Under the present 10-day waiting period required by law, there is not sufficient time to check on a contractor's qualifications and the State Equalization Board does not do a complete job of investigation before the license is issued," Marlow said. The contractors have to set up an examining board to study the qualifications of contractors before a license is issued.

In almost every state, except four in which licensing is primarily for reve-



Licensing trends . . .

nue, local contractors have pushed these bills through legislatures. A licensing division attache in one state summed up one major reason for the licensing laws: to restrict undesirable contractors from out-of-state in local operations.

That is not the only reason, of course. Idaho, for example, passed a law in 1941 licensing contractors for public works. The legislation came about because suppliers in Boise and other Idaho cities complained that they had been left holding the bag by irresponsible contractors. As a result, one of the key provisions of the Idaho law is one requiring proof of financial responsibility—and financial statements by a certified public accountant.

I. Model law cited

California's contracting license law is sometimes considered a model. The Construction Minister of Japan paid a recent visit to California and when he returned to his country, he took with him a copy of the California law. Since then it has been adopted as law in Japan.

The California law was enacted in 1929. It was a regulation proposal advocated by the construction industry as an aftermath of the roaring 20's which resulted in millions of dollars in mechanic's liens filed against builders.

Responsible contractors were far-sighted enough to see that something must be done.

The licensing law was a pioneer move, with no storehouse of experience to draw on. It was enacted as a compromise measure after several previous attempts to enact a regulatory law had failed. Since then there have been repeated amendments to the law strengthening it.

• **Qualification**—The law provides that every applicant for license must be possessed of good character; it defines that which constitutes lack of character, applicable not only to the individual applicant, but to each corporate officer, each partner, and to a responsible managing employee of an applicant. Possible bases for rejection are:

• That the applicant has committed or done some act which if committed or done by a licensee would be grounds for the suspension or revocation of license.

• That the applicant has done some act involving dishonesty, fraud or deceit wherein he has benefitted or some other person has been injured thereby.

• That the applicant bears a bad reputation for honesty and integrity.

• That the applicant has been convicted of a felony.

• **Classification**—The law sets up only two classifications of contractors—general engineering and general building, but the State Board has established 31 other classifications.

A board rule says that one operating outside the scope of his classification will be subjected to disciplinary action—that is, he runs the risk of suspension or revocation of his license. Courts in the state already have deprived contractors from collecting for services for acting outside their classification, just as those who operate a license in the first instance.

The Licensing Board has established a rule requiring applicants to have four years of experience, within the last 10 years, as a journeyman or foreman or superintendent in the craft or classification under which they seek a license.

Applicants must set forth a detailed record of experience on application forms, which must be verified. Next they are examined.

• **Exams**—Examinations are in two parts:

• The first part deals with the various state laws the board feels a contractor should have general knowledge of, along with questions on business, payroll computation and figuring a general estimate which embraces all of these items of overhead which are so many times overlooked.

• The second part of the examination is of a craft or technical nature. The questions for the craft part of the examination are suggested by representative persons of the craft involved in the test.

About 33% fail at their first attempt at the examination. Those who would enter the vocation of contracting can take but four examinations in a year period, since a 90 day waiting period is required between examinations for those who fail. For every five applications, only one becomes a licensed contractor. The other four fall out.

• **Results**—R. J. Morrisey, State Registrar of Contractors, figures that without a license law in California the registration would not be the 61,586 it was at the end of March but five times as many, or more than 300,000. Here, he says, is something that can't be measured: How many are deterred merely because there is such a law on the statute books?

II. Some variations

In most other states' licensing laws are not as comprehensive or as complicated as those in California. Although most states follow the same general pattern, Florida is an example of a state with significant differences.

• Florida has a blanket state licensing act that can be used by any county or municipality. A license must be obtained in each county in which the contractor establishes headquarters or

a separate place of business. County tax is 50% of the state tax.

The state tax is $3 plus $1 for each person employed, maximum $250. Certain municipalities also are permitted to levy a tax equal to 50% of the state tax. A license is required where a contractor performs contracts for the federal government, even on federal land.

Most municipalities, especially the larger ones, have ordinances or charter provisions empowering them to require contractors to undergo examinations and pay special license fees. Miami, for example, requires contractors—all kinds—to take an examination before a contractors' examining board. Fee for the examination is $25 with an annual tax of $5 after that.

There is reciprocity throughout the county—Dade—in which Miami is located. Also, the heavily populated counties of Dade, Duval (Jacksonville), and Hillsborough (Tampa) have reciprocal agreements with one another.

Florida counties and municipalities will generally extend reciprocity to out-of-state contractors if they can show that they have been licensed by the state of their origin.

• **Elsewhere**—In some states, licensing of contractors is for revenue only. In Delaware, Maryland, Mississippi, and Utah the contractor pays the fee, ranging from $5 to $25 (minimum) and he gets the license, without any examination. In addition, he pays a certain percentage of either gross receipts or contract value. In Delaware, this percentage basis could cost a contractor $555 on a $1-million contract. In Mississippi it could cost $525.

In Idaho and Montana only public works contractors are covered by the law, and in Michigan, only residential builders. In the other 15 states, all types of contractors are regulated. In addition to the licensing, most of the states also require pre-qualification of bidders. North Carolina is the only state which requires contractors to pre-qualify on all types of projects (undertaking contracts of $15,000 or more).

In 12 of the 18 states, all highway contractors must pre-qualify. In four states contractors must pre-qualify for all state public works. Delaware requires no pre-qualification.

III. Alternatives

If licensing of contractors is not the best solution, what is? Many feel that pre-qualification of bidders or policing by the industry itself would be better. But the strongest alternative to contractor licensing seems to be bonding.

The nation's surety underwriters have not taken a public position on licensing of contractors—but they do have strong opinions on the value of performance bonds, and on the characters of contractors.

The men who do the insuring feel that performance bonds, which guarantee to an owner that a job will be completed on schedule and in accordance with plans and specifications, are a must for buyers of construction. They feel that performance bonds should be required on every job.

No surety underwriter would undertake to issue any blanket performance bond for any contractor. The risk is too great because the types of work in which a contractor may engage are too varied. But the underwriters will gladly handle bonds on an individual job basis.

Underwriters generally oppose state laws that would require all contractors to be bonded. Such a law has been proposed in New York State at each meeting of the legislature for the past three years.

On "maintenance bonds," which guarantee that a piece of construction will stand up for a specified period, the surety companies want to be very selective.

"Too many contractors in the small home field," said one official, "are fly-by-night or so small that their lack of financial responsibility makes them too big a risk for us."

The best guarantee, according to the surety men, is the performance bond. "Any contractor who successfully passes the examinations we require for a performance bond is a good risk," the official said.

Airport aid crucial, Doolittle warns

Either follow through on the federal-aid airport program or cancel it completely. That is the advice the Doolittle Commission offered Congress and the executive branch last week in its report to the President.

During the years before Congress passed the Federal-aid Airport Act of 1946, the government aided construction of local airports to the tune of more than $700 million. The 1946 act authorized matching-fund aid of $100 million a year. But in the six years since the act took effect, Congress has voted less than $170 million of federal funds to assist airport construction.

For the coming fiscal year starting July 1, the prospect is just as bleak. The President's budget asked only $26.5 million; of which less than $15 million would be for aid to construction. The House cut the total to $20 million, with a little more than $17 million of it for airport projects. There are about $75 million of local funds in desirable projects waiting for federal matching, the report points out.

• **Delaying action**—Failure to deliver on promised airport aid is hurting local progress, the commission declared. Hard as it is for cities and towns to raise their own airport construction money, they would get ahead faster, the commission believes, if the prospect of eventual federal aid were not constantly dangling before their noses. Local officials hesitate to go ahead and spend their own money and run the risk of losing out on federal assistance that may come along later. Delayed federal promises thus block local action.

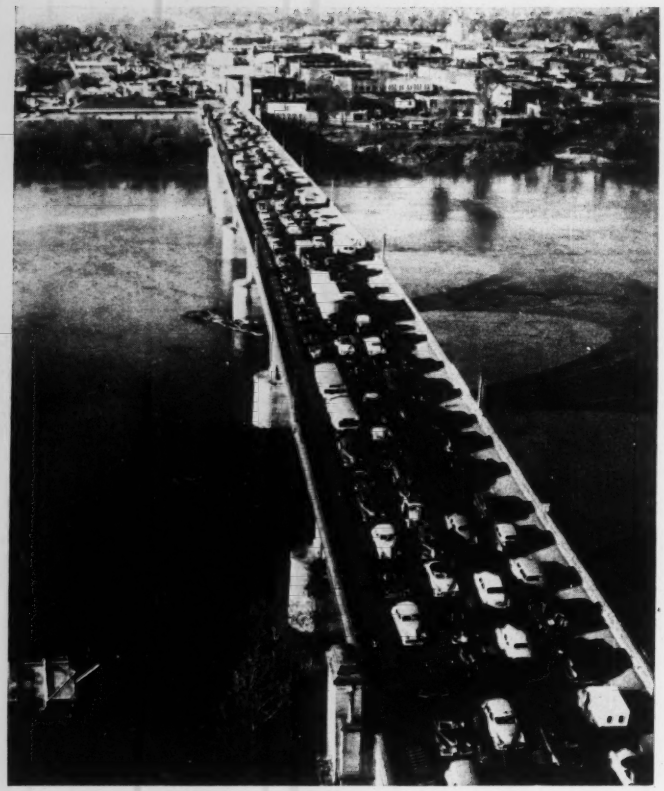
What the three commissioners really want to see is realistic follow-through on the federal-aid airport program. They recommend that aid authorizations be beefed up by adequate appropriations, with highest project priority given to runways and runway extensions incorporated in the layout of the airports.

Broad-gaged, practical proposals for future airport development were recommended by the President's airport commission. Completing its ninety-day job on schedule, the three-man group called for airports that will serve safely and efficiently in the present and allow more expansion in the future.

Appointed last February after the third deadly crash near the Newark (N. J.) Airport (ENR Jan. 31, p. 24), the commission carried out the President's directive to make a realistic and objective restudy of national policy on airport location and use. Truman laid down three objectives for the commissioners to keep in mind for their report.

(1) The safety, welfare and peace of mind of people who live near airports, (2) the national defense and (3) the importance of a healthy, growing air transport industry to the nation's future.

Much that the commission advocates in its report has been urged for years by the Civil Aeronautics Administration. With Gen. James H. (Jimmy) Doolittle—now vice president of Shell Oil—and his two teammates putting their weight behind them, the recommendations will now get more attention. Doolittle's colleagues on the commission were Charles F. Horne, CAA Administrator, and Jerome C. Hunsaker, head of the aeronautical engineering department at Massachusetts Institute of Technology and chairman of the National Advisory Committee for Aeronautics.



Who owns this bridge?

One of the most important bridges in Arkansas—a 2,000-ft bridge across the Arkansas River between Little Rock and North Little Rock—is an outcast and an orphan.

No one owns the Main Street Bridge and apparently no one wants it. After 28 years of honest service, this solid piece of engineering achievement still is the second-busiest traffic spot in the state, carrying an average of 27,000 vehicles daily. But no governmental unit, no corporation, no individual will claim ownership and responsibility for maintenance and repair.

The bridge was completed in 1924 by the Missouri Valley Bridge Corporation of Leavenworth, Kan., under auspices of a taxpayers' improvement district. It cost approximately $1.3 million. Even the most conservative estimates put today's replacement value at $5 million. Army Engineers now would require greater clearance above water level—(one factor in greater cost).

• **The mystery**—The ownership mystery popped up several months ago when a truck punched a hole in a balustrade (railing). The City of Little Rock (at the direction of City Engineer Jan L. Carter) put up a barricade and waited for the owner to come fix his bridge.

The improvement district had been dissolved, so it wasn't the owner. The state Highway Department disclaimed responsibility. North Little Rock's mayor, Ross L. Lawhon, as a gag, announced he would claim squatter's rights and turn it into a toll bridge if someone else didn't step up quickly. However, he didn't offer to fix the bridge. The wait proved to be a long one.

Pulaski County Judge Arch Campbell, a civil engineer with some sentiment about the mistreatment of the handiwork of his profession, stepped in. He ordered the bridge repaired with county funds, but refused to accept permanent maintenance responsibility. He said he would maintain and repair the bridge only until the ownership was decided.

A. E. Johnson, chief engineer of the Highway Department, said: "I just don't know whose it is."

• **Test suit planned**—Pulaski County Prosecuting Attorney Tom Downie has suggested that County Judge Campbell file a test court suit to determine ownership.

Both the Main Street and Broadway bridges were built by the same improvement district, but Downie said there was no question about title to the Broadway bridge because it had become part of the state system of highways.

"There are some serious questions as to the title of the Main Street Bridge," Downie said.

He pointed out that 1919 and 1923 state acts, authorizing the improvement district, provided that when the bridges were paid for they were to be turned over to Pulaski County and become county property. However, the action of the 1938 legislature in assuming the debts of several bridge districts indicated that ownership should go to the state sooner or later.

S. L. White, attorney for the improvement district, said that when the district was dissolved by court order in January, 1951, the court ordered the bridge turned over to the Highway Department.

The county still hasn't filed a test suit. Even when filed, the suit probably will have to go to the Arkansas Supreme Court for the final word. For the present, the Main Street Bridge will continue being "no man's bridge."

One dies, three hurt as bridge span drops

One state Highway Department employee died under 100 tons of freshly poured concrete and three others were injured when supports gave way on Delray Bridge, Highway 31, near Pulaski, Tenn.

The bridge, a $200,000 railroad overpass, is being built to replace a wooden structure which collapsed last August.

The concrete had just been poured Tuesday, May 13, into the fourth span, when wooden supports gave way. The crashing concrete splintered timbers of the form so badly that investigation of the accident appeared to be completely useless.

S. H. Bracey, superintendent of the bridge for Marion Construction Co., said he had inspected the fresh concrete just before it fell and could give no reason for the failure of the supports.

NPA looses allotments for 1,069 projects

After National Production Authority Administrator Henry H. Fowler told construction men last week that controls would be eased, action followed fast.

Allotments of controlled materials for construction of commercial, religious, entertainment and municipal projects to cost an estimated $337 million were announced last week by NPA.

In addition to 1,069 projects to get underway, 43 other applicants were given an approved construction schedule, permitting them to commence or continue construction, but did not require an allotment. Another 26 were notified they were exempt because their requirements for delivery of controlled materials did not exceed the limits for self-authorization permitted by the revised CMP Regulation 6.

Geographical breakdown shows California leads in estimated dollar value of building with 120 projects costing $62 million. New Jersey is next with 29 projects costing some $43 million, followed by New York with 29 projects at $33 million.

Project breakdown shows the trends toward more commercial structures. Leading the list are 249 retail stores with an estimated cost of $144 million, and 109 office and loft buildings at $34 million. The allotments are for materials to be delivered in the third quarter or subsequently.

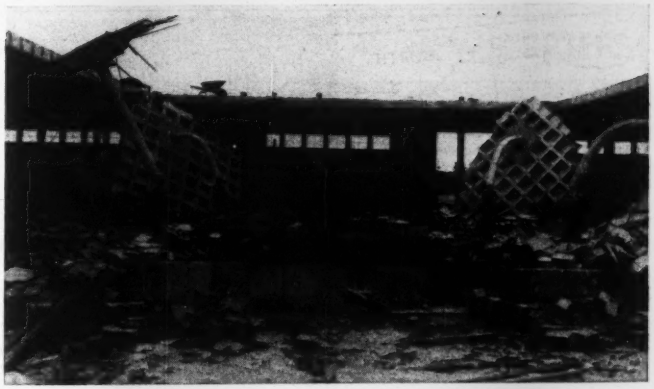
Engineers appeal ruling on levee break blame

The Sacramento District, Corps of Engineers, has recommended to the Chief of Engineers in Washington, D. C. that an appeal be taken in an effort to overrule a Federal District Court's ruling blaming the Corps of Engineers for a levee break on the Feather River in California in 1937.

Federal Judge Dal M. Lemmon (ENR May 1, p. 25) ruled it was the Engineers' negligence in supervising a levee repair job which caused the structure to break four years later. The decision has paved the way for some 70 landowners to collect damages from the government. The extent of the liability is to be determined in subsequent trials.

Shasta Dam to help out in fight against flood

Shasta Lake behind Shasta Dam in California has filled to its 4.5 million acre-ft capacity for the first time since the gigantic structure went into operation in 1945. It will help take care of record spring runoff.



COLLAPSE of a 2,500-sq ft waffle-block slab roof for a Florida factory occurred under test loading. Concrete blocks in foreground formed sides of tank that held water used in the test. (John T. Bills photo)

Waffle roof falls again

A 50-ft square concrete roof slab for a factory under construction at Ojus, Fla., collapsed May 9. It was carrying a test load of about 12 in. of water at the time. This was the third time one of these roof slabs broke.

Three engineers and a workman scrambled to safety as the 175,000-lb slab crashed to the ground.

• **Roof erected by lift-up**—The slab consisted of concrete-pan blocks, called "waffle" blocks, wedged between thin reinforced concrete joists. It had been cast on the ground and jacked into place (ENR Feb. 21, p. 30). Supports were four 10-in. dia concrete columns, which were spaced 30 ft on centers, so that the slab cantilevered 10 ft beyond. Reinforcing steel in the slab averaged 1.8 lb per sq ft, in accordance with a model analysis made by the Presan Corp., of Los Angeles.

The slab is one of eight planned for a 100x200-ft building being constructed for the Atlas Terminals Corp., of New York City. L. G. Farrant and Walter Harry designed the slabs, and Morris Burk is general contractor for the project.

• **Slabs failed before**—Failures occurred twice previously. One took place on March 18 when a slab was being jacked into position (ENR March 27, p. 21). The second happened April 2, when a roof section suddenly fell, injuring a workman. That accident was attributed to stripping of threads on pipe stubs used for anchoring the slab to a column.

As a result, Robert Cook, director of Dade County planning, ordered load tests which would have to be made prior to issuance of a certificate of occupancy.

• **Roof flooded**—In accordance with county requirements, one of the slabs was loaded with 8¾ in. of water. The contractor reports that under this loading, deflection was only one-third the allowable and recovery was 100%.

After this, Burk said, the engineers decided to test another slab with a 50% overload, or 13½ in. of water.

When the roof was carrying 12¾ in. of water, Walter Harry, one of the consulting engineers, and a workman, noting a leak in one side of the canvas tank went up to plug it. At the time, George Wingerter, head of the Wingerter Testing Laboratories of Miami, and J. L. Calvin, one of his engineers, were measuring deflections with a transit from a point near an edge of the loaded slab. Suddenly, they were alerted by the sound of concrete cracking; all four men rushed out of danger. The slab crashed to the ground.

No reason for the collapse has been offered yet by the contractor, consulting engineers or county officials. But the symmetry of the columns after failure (see photo) could be an indication that the collapse might have started with formation of cracks at the bottom of the slab near the center, throwing large negative moments into the slab around the columns and causing the concrete to crack in those areas. These cracks might have increased to the extent that the center portion of the slab dropped out. The columns, then being unbalanced by the slab overhangs, would all have buckled outward, as shown in the photo.

GAVINS POINT DAM—The fifth Army Engineer dam to be started on the Missouri River under the Pick-Sloan Plan—will generate 100,000 kw of power and furnish 165,000 acre-ft of flood storage.

Another shackle for the Big Muddy

Whether the Missouri River likes it or not, it is getting its fifth manmade shackle—in the form of Gavins Point Dam, to be built 4 mi west of Yankton, S. D. and what's more, would-be floodwaters in the river will be harnessed for a useful purpose to the tune of producing 100,000 kw of hydropower when the dam and its power plant are completed in 1956.

Ground-breaking ceremonies at the damsite last Sunday marked the official start of construction on the $60-million project. Lieut. Gen. Lewis A. Pick, Army Chief of Engineers, was the principal speaker; with Governors Sigurd Anderson of South Dakota and Val Peterson of Nebraska serving jointly as masters of ceremonies. Over 10,000 persons witnessed the ground-breaking, including six members of Congress and members of the Missouri Basin Inter-agency Committee.

• **Tie-in with Fort Randall**—Gavins Point Dam is the Corps of Engineers' fifth multiple purpose dam in the Pick-Sloan Plan to shackle the ever-flooding Big Muddy, harness its waters for the production of hydropower, and provide irrigation and other benefits in the Missouri River valley. But unlike the other four main-stem dams—Fort Peck, Garrison, Oahe and Fort Randall—its operation will have a close functional relationship with that of Fort Randall, located a short distance upstream.

In addition to having its own hydropower potential of 100,000 kw, Gavins Point Dam will serve as a reregulating structure for peak discharges from Fort Randall. By smoothing these flows it will permit highly desirable peaking of the full power potential (320,000 kw) of that project.

Without Gavins Point to reregulate the outflow from Fort Randall peaking operations of that power plant would have to be restricted. Otherwise fluctuations in river stages resulting from such operations would cause serious ice jams in the wintertime and interfere with navigation during the open water season.

Gavins Point Dam will be a rolled earth fill and chalk embankment. It will be nearly as long, but less than one-third as high as Fort Randall. Its left abutment will be on the South Dakota side of the river and its right abutment in Nebraska. The power plant will be on the Nebraska side, just below the new damsite.

• **No flood-control tunnels**—One unusual feature of the dam is that no outlet tunnels will be needed for the sole purpose of releasing water. The controlled spillway will be set at a sufficiently low elevation to provide regulation of reservoir levels. Most releases for downstream requirements will be accomplished through the powerhouse.

Tentative plans call for a chute-type spillway in the right abutment, controlled by 22 gates. Studies are being made, however, to substitute a smaller 14-gate service spillway, supplemented by any emergency spillway of either a "fuse-plug" or gated type.

• **In-again, out-again**—The need for Gavins Point Dam as part of the Pick-Sloan Plan has been recognized ever since the inception of that plan (ENR Dec. 14, 1944, Vol. I, p. 757). But it has been an in-again, out-again project as far as congressional appropriations were concerned.

The need for more hydro power, however, together with its functional tie-in with Fort Randall, focused attention last year on getting Gavins Point Dam started. No direct congressional funds were available but Congress authorized its start and directed that the initial $2 million of construction funds be substracted from the $34,699,000 appropriated for Fort Randall last fall.

• **Two going contracts**—This led to the award of initial contracts. Lust and Clark Construction Co., Kansas City, Mo. holds an $860,000 contract for 1,960,000 cu yd of excavation. This work will be started immediately.

A $3,010,000 contract was awarded last March to the Baldwin-Lima-Hamilton Corp., Philadelphia, for fabricating and installing the turbines for the powerhouse.

This long-term contract which extends into March 1956, calls for three 54,000-hp turbines complete with accessories and spare parts. Before the actual work on the turbines begins, however, the contractor will be required to build a model for testing and observation purposes. The turbines will be of the Kaplan adjustable blade, propeller type.

Shipment of the accessories and turbine parts for imbedment in the powerhouse substructure will begin this July. Delivery of the first turbine is scheduled for July 1955, and the second one the following November. The contract calls for installation of the third and last turbine in March 1956.

• **Power distribution**—Power will be generated at 13,800 v in the Gavins Point power plant and stepped up to 115,000 and 230,000 v for long distance transmission.

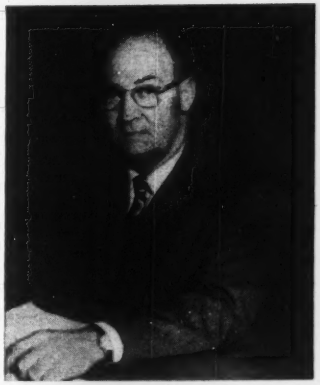
Transmission facilities are being planned and constructed by the Bureau of Reclamation which, under the Pick-Sloan Plan for development of the Missouri River Valley, has the responsibility of marketing excess power produced at the multiple purpose dams.

• **No big diversion problem**—During construction of Gavins Point Dam, diversion of the Missouri will be through the powerhouse outlets. While the capacity of these outlets will be relatively small at such low heads it will be adequate to handle

the flow. By that time Fort Randall will be able to store any major floods until Gavins Point is high enough.

Although Gavins Point Dam is to be an earth and chalk embankment, its powerhouse and appurtenant works will require 364,000 cu yd of concrete. Excavation on the entire project is estimated to total 18,031,000 cu yd. This will include 10,839,000 cu yd of chalk; 4,918,000 cu yd of alluvium, 1,718,000 cu yd of glacial material; and 556,000 cu yd of shale.

• **Engineers in charge**—Gavins Point Dam will be constructed under the supervision of Col. Henry J. Hoeffer, Omaha District Engineer; reporting to Brig. Gen. Don G. Shingler, Missouri River Division Engineer, Corps of Engineers, Omaha; John C. Hays is Area Engineer.



AREA ENGINEER John Hays will supervise construction of the $60-million project.

Lakes level damage found extensive

Waterfront damage due to high levels of the Great Lakes now is being studied by the U. S. Corps of Engineers, according to Col. Wendell P. Trower, Division Engineer at Chicago (ENR May 15, p. 25). The study was begun March 26. District engineers now are compiling data for their areas.

Although the full extent of the damages won't be known until the end of this month, when all the district engineer reports are in, several areas are known to have suffered extensive damage, either from shore erosion, or inundation.

Most of the beaches and much of the shore property from the Illinois-Wisconsin state line around the southern top of Lake Michigan to the Indiana-Michigan line have suffered extensive damage from shore erosion. One particularly hard hit area is the eastern shore of Lake Michigan, containing many publicly owned recreational beaches. Some of these beaches have lost as much as 75% of their recreational areas. The monetary value of erosion damage will be high along the Chicago lake front, due to the high real estate value of the abutting property. In this area extensive repairs will have to be made to existing protective devices already damaged by wave action of the high water. Another bad erosion area is along the southern shore of Lake Erie, where high bluffs—many in residential areas—are being eaten away by the pounding water.

• **Other areas**—Damage by inundation is particularly severe along the southern shore of Lake Ontario, from Rochester, N. Y. to a point about 25 miles west of that city. Several small communities in that region, built on low-lying, narrow sand spits lying between lagoons or marshes, have been inundated to a relatively shallow depth during recent lake storms in that area.

Another area seriously affected by inundation is along the Western shore of Lake St. Clair, north of Detroit, Michigan. Property owners in this area are having trouble keeping their septic tanks in operation, while some privately owned domestic wells have been contaminated. The Michigan State Highway Department reports that it expects to spend some $1 million this year in a fight against the rising lake levels which threaten to undermine and destroy state trunkline highways at many different locations along Lakes Michigan, Huron and the St. Clair River.

This expenditure will be only a small fraction of what the cost would be if the erosion forces set in motion by the record high water are allowed to work without counter action on the part of the highway department, declared Highway Commissioner Charles M. Ziegler. If sections of the lake front highways are wiped out, the state would be forced to relocate highways and, whereas only a few hundred feet of highway might be lost, it would be necessary to build many miles of road on new location.

So far the department has spent about $300,000 this year erecting jetties and placing rock along the lake shores to halt erosion and prevent destruction of nearby state trunklines.

The upshot of the U. S. Engineer preliminary survey of damage from high lake levels will be whether or not the Army Engineers recommend, and Congress authorizes them to make, an extensive detailed survey of existing damages and how to prevent them.

NEWS BRIEFS

• **Water struggle coming**—Pennsylvania has taken its stand against further diversion of Delaware River water by New York City. Opposition has been filed with the U. S. Supreme Court, it was announced late last week. New York had filed a petition with the high court last month, asking the 1931 limitation of 440-mgd diversion be upped so that its planned Stage 3 development on the Delaware might begin. For other news in New York's water situation, see p. 42.

• **More aluminum**—Reynolds Metal Co. last week dedicated its new $80-million aluminum reduction plant at San Pargicio, near Corpus Christi, Texas. Containing what is claimed to be the largest pot line for production of aluminum in the world, it will produce 160 million lb of aluminum annually—another boost for construction.

• **Foundations watched**—Foundations of buildings on more than a square mile of area of downtown Milwaukee are now being checked by the city building inspector's office. At least three downtown buildings have shown signs of considerable settling. Dry rot, setting in at the top of wooden pilings because of a drop in ground-water level, was blamed in the case of one 14-story structure. They are being replaced.

• **Irrigation recommended**—A new Bureau of Reclamation report recommends addition of a Sacramento canals unit to the California Central Valley project. It would irrigate 205,000 acres of land along the Sacramento River. Total construction costs for the unit is estimated at $54 million. Cost of distribution systems which might be built by local interests is estimated at $60 million. Total construction involved: $114 million.

Bid-shopping attacked

Pressure is mounting in favor of legislation prohibiting peddling of construction bids. Eight representatives have introduced identical bills that would remove the incentive for bid-shopping by returning all money savings to the government instead of letting the contractors pocket the profit. The bills are designed to meet the objections raised to S. 2907 (ENR May 8, p. 22) by: removing the specific references to mechanical specialty trades; extending bid protection to the mechanical sub-subcontractors; providing bid publication protection to the sub-subcontractors.

WILLIAM J. LEVITT faces the fight of his career in Pennsylvania.

Violence flares in strike as pickets defy courts

The labor scene erupted into violence last week as pickets demonstrated at the site of the 16,000-home development of William J. Levitt and Sons in Bucks County, Pa. At week's end violence continued and the biggest non-union builder had still not capitulated.

Strikes hit Detroit and northern California hard.

In Detroit, work ceased on all construction work from building of homes to giant expressways.

Northern California witnessed countermeasures to the carpenters strike by the Associated General Contractors.

• **Levitt struck**—William J. Levitt and his highly trained organization are encountering the strongest organized labor opposition in their 22-year building career as they build a 16,000-home Levittown near Morrisville, Bucks County, Pa.

The development is principally for workers expected to be employed at the new Fairless plant of U. S. Steel.

Some 300 pickets started marching at the Levittown site. A spokesman for the Philadelphia Building and Construction Trades Council said the pickets, members of AFL construction unions, objected to the labor practices of Levitt's organization.

As soon as mass picketing started, Levitt sent his attorney, Isaac J. Van Artasdalen of Boylestown, Pa., before Judge Hiram Keller of Bucks County.

Levitt asked for an injunction—technically a bill in equity—and got it.

Judge Keller issued a restraining order telling the people named in Levitt's bill—10 unions, and the Building and Construction Trades Council of Philadelphia, Norman Blumberg, secretary of the council—to cease mass picketing. The order included the fictitious legal malefactor, John Doe.

The order set forth the conditions for picketing. The pickets were limited to five at each entrance and exit to the project. The order also told the pickets to keep five feet apart and keep moving. Violence and the threat of violence was ordered stopped, as was the damaging of property. The order then made it clear that strikers were not to trail or intimidate any person employed on the job.

• **Results of the injunction**—Thursday, May 15 saw the Judge's order promptly ignored. About 150 pickets massed at the project and started a noisy demonstration. Rocks were thrown at the police.

Deputy Sheriff William B. Lang said the situation was getting out of hand. He then called Governor John Fine's office, to ask for the State Police. He didn't reach him, but on Friday, May 16, six State Police showed up and began cruising around the area. That increased the police on the scene—four from Tullytown, eight special officers, and several from Bristol Township—but did not stop the disorders.

That Friday, 400 pickets showed up at the main entrance, noisy and demonstrative. Again stones were thrown, glass was broken in cars and work buildings and placards of the restraining order were torn down. There were reports of some persons being hurt.

The work was shut down. Those employees who did get in to the job site were told to report to work again on Monday, May 19.

• **Where are pickets from?**—Reports indicate that the pickets are from Philadelphia and from nearby New Jersey. Most of the pickets report to the Levittown site early and leave for other jobs during the morning.

Near the Levittown site, the Danherst Corp. reported that their carpenters did not show up on Friday.

May 16. Danherst officials said that they presumed that they were among the pickets of the Levittown project.

• **Determination**—Determined words came from William J. Levitt. He said that the pickets are taking the law into their own hands. "It is no strike," he said.

From the union leaders no words, but reports indicate that they intend to beat Levitt. They will not stop short of the highest court.

Hearings on a permanent injunction were scheduled for Monday, May 19.

The unions charged that Levitt pays workers on a piecework basis; allows skilled mechanics to perform a variety of jobs and works with an open shop, hiring both union and non-union labor. The spokesman said these practices are contrary to traditional methods in the building industry and threaten to undermine labor's position throughout the area.

The trades council said it wrote Levitt last summer to arrange a meeting with the unions. Levitt ignored the letter and others that followed, the council said. Then the council picketed Levitt's sample homes when he opened them early last December. The council said this action got them a conference with the builder, which led to two other meetings.

"We didn't get anywhere," said the spokesmen. "Levitt says he wants to hire people his own way. He told us he would hire people his own way until something stopped him."

Ralph W. Myers, public relations man for Levitt, denied that the firm's subcontractors pay on a piecework basis, except in special cases. "As to the matter of the union shop," said Myers, "we can only say that Mr. Levitt, who has been in the building business for 22 years, is the biggest builder in the country and has never had a union shop."

The picketing continues.

Carpenters out in Detroit

A strike of 15,000 carpenters last weekend brought immediate and drastic results in the three-county area encircling Detroit.

About 16,000 other AFL building trades workers including bricklayers, hoisting engineers, laborers, construction workers, cement masons and reinforced-steel workers respected picket lines posted by the carpenters.

Each trade union is in negotiation with contractors, but the carpenters are the only group which is legally

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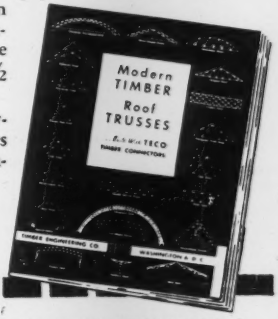

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PICKETS, such as these shown on another strike, are defying the court's order to cease massing at the entrances to Levitt's job.

Strikes beset many parts of country

on strike against the contractors.

Work ceased May 10 on the city's giant expressways, the city-county building, new homes and institutional buildings. Construction of defense and other plants going up for General Motors, Chrysler, Ford and many other companies also shut down.

• **The Dispute**—Union demands originally amounted to a 22.5 cent-an-hour package, 15¢ in wages, 7.5¢ in health and welfare benefits. These demands were cut to 20¢, but the four contractor associations bargaining with the unions offered a package which was a nickel shy of the union figure, and would not have been immediately effective. The association offer would have given workers a 5¢ wage raise at once and another 5¢ raise Sept 1, while fringe benefits would have brought 2¢ as of May 1 and 3¢ on August 1.

Contractors counterattack

All building in 42 northern California counties was ordered halted at the end of the work day (May 13) by the associated general contractors and most jobs trickled to a stop by Wednesday (May 14). But some contractors ignored the order.

The shutdown was ordered in retaliation against AFL carpenters for signing agreements with individual employers. The statement accused carpenters of demanding that contractors sign interim agreements providing what the contractors call "illegal wage increases."

C. R. Bartalini, secretary of the AFL Carpenters District Council, denied that interim agreements with individual contractors are contract violations and that carpenters have solicited such agreements. "We will certainly continue to sign up individual contractors who approach us," he said, "but never have we solicited employers."

In Richmond, 130 members of the General Contractors of Contra Costa County, which is a signatory of AGC contracts, said they would not "go along" with the shutdown order. AGC spokesmen say this is the only "holdout" among the AGC members or signatories, but that independent contractors spotted throughout the northern half of the state have ignored the stop work order and have made separate agreements with the striking carpenters.

The carpenters strike began March 31 in San Francisco, San Mateo, Alameda and Marin Counties, and spread generally in northern California, causing a tieup of some $400 million in building projects.

The carpenters want a 15¢ hourly pay raise and employers 7½¢ hourly contribution to a welfare fund. In addition, those in the 42 counties want 6¢ an hour more for parity with the Bay area scale.

Other strikes

• **Niagara Falls, N. Y.** Construction work at the Niagara Falls Airport, a top priority Army project, is continuing despite a strike of 1,000 carpenters, laborers and lathers.

Between 150 and 200 laborers are continuing to work at the airport after a special request by Army officials.

In the same city, 600 striking city workers were told that they were no longer employees of the city, and steps were taken to have private contractors collect the city's garbage and refuse and complete street-paving jobs.

In announcing that the men, who struck May 8, are no longer city employees, the city manager invoked the Condin-Wadlin Act, a state law which prohibits strikes by government employees and provides loss of jobs and other penalties.

• **Wilmington, Del.** A long-threatened strike of sheet metal workers began in the Wilmington area.

The strike was called against seven local contractors after failure to reach an agreement with their employers on a health and welfare plan brought by the AFL Sheet Metal Local 59.

• **Philadelphia, Pa.** Construction contractors said a spreading walkout by equipment operators of AFL operating engineers union had halted $100 million worth of industrial and municipal building in the five-county Philadelphia area.

Simultaneously, home-development building in the five-county area was hit by a strike of 600 plumbers employed by the builders. Other AFL craftsmen remained on their jobs pending action by the Building and Construction Trades Council on wage increases offered by the builders. A spokesman for the home builders said the plumbers walkout has had no serious effect, so far.

The union insists that in the case of the operating engineers there is no strike, but H. A. Windisch, spokesman for three associations representing 150 contractors who are doing the work, says there is a strike.

The short building season acted as a spur in getting both sides of a WSB dispute to submit their differences to the Wage Stabilization Board as . . .

Alaska strike goes to WSB

The wage dispute that threatened to shut down the Alaska defense construction program, $173 million worth, is due for Wage Stabilization Board help.

The opponents—Alaska Chapter, Associated General Contractors and Alaska Council of Carpenters, AFL—reached a deadlock on negotiations of a new contract.

Both sides submitted the dispute to the Board, asking it to make a "final and binding" decision.

Hearings were planned in Wash-

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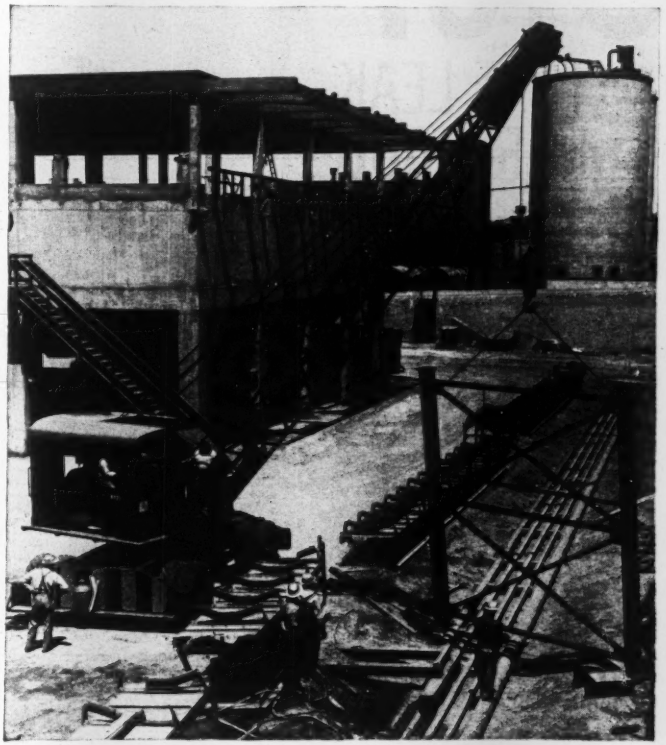

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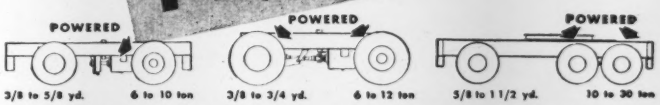

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NATHAN FEINSINGER, WSB (left), handed the job of judging the merits of the Alaska carpenters' dispute to Professor Archibald Cox, CISC (right).

ington by WSB's Construction Industry Stabilization Commission as soon as possible after the carpenters ended the strike begun May 5.

CISC will conduct hearings and make recommendations to WSB which will make the final decision. Normally, CISC only handles wage policies for WSB. But it has been utilized before in a dispute involving AFL crafts engaged in construction at the Hanford Atomic Project.

• **Why strike now?**—Labor's bargaining position is unusually good at this time of year, at the start of the short construction season.

Carpenters took advantage of this situation when they went out on strike to press their demands for higher wages. They received $3.14 an hour last year, sought $3.70 this year but were unable to persuade the Alaska chapter of the AGC to go along on a request to the WSB for $3.39. The walkout affects 3,500 carpenters and about 12,000 construction workers. The other trades had accepted 20¢ hourly wage increases under the wage ceilings.

WSB cites Ferguson on wage payments

The H. K. Ferguson Company, Cleveland, was cited last Thursday by the regional Wage Stabilization Board (Region 6A) for allegedly paying over-ceiling wages to bricklayers on a construction project finished in December of last year at Dayton, Ohio. Ferguson is accused of making $19,528 in overpayments by paying $4 daily in subsistence rates to the bricklayers, in addition to the hourly rate.

Robert L. Cashen, vice-president of H. K. Ferguson Company, said that his company began construction March 8, 1951, on a new building for the National Cash Register Company in Dayton.

At the end of April, 1951, Ferguson, in accordance with General Regulation No. 9, provisions of which were issued in March, 1951, by the Economic Stabilization Commission, filed with the Wage and Hour Division of the Commission in Cincinnati, Ohio, a schedule of rates which Ferguson proposed to pay bricklayers. This schedule sent by Ferguson states that it was customary to pay any bricklayer from outside the Dayton area a $4 daily subsistence rate. WSB investigators later found that there was no such precedent established.

On May 2, 1951, acknowledgement of Ferguson's information was sent by the supervising investigator of the Cincinnati office. In the acknowledgement, this Commission officer states that Ferguson's schedule had been sent to Washington for consideration and review, and that, meanwhile, if the wage information from the Dayton area, gathered prior to the job by Ferguson, was true and in accordance with the customary wage practices in that area, Ferguson could proceed with the mason-work.

Ferguson went ahead with the job, hiring around sixty bricklayers from outside Dayton, paying them $4 per day subsistence plus an hourly wage of $2.87.

Hearing is scheduled for June 17 in Cleveland. Total payroll involved in overcharge payments is $132,399.

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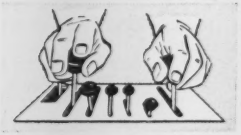

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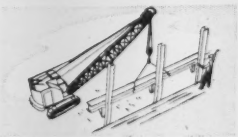

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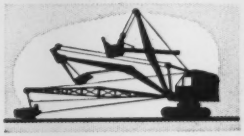

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Philadelphia uproots graft in permits and inspections

Those elements of the building industry in Philadelphia whose business has required dealing with the city have had a weight lifted from their shoulders—and a hand removed from their pocketbooks.

For years they have been prey to a flourishing and highly developed system of graft and extortion. Unlawful levies in the issuance of permits and in the inspection of their work have taken from them up to a half-million dollars annually.

The story is on the record. After three years of investigation, it unfolded before two grand juries and in court actions that followed. The official score in prosecutions of city officials and employees, accused of participating in the system, is:

- Twelve convictions and two acquittals.
- Ten awaiting trial in cases being prosecuted by the Philadelphia County District Attorney.
- Sixteen having their records examined by the City Solicitor's office, to determine if disciplinary action by the Civil Service Commission is warranted.

Two others under charges committed suicide.

These are results of the long, thorough and relentless investigation which began early in 1948 under the then Attorney General T. McKeen Chidsey of Pennsylvania and which has been continued by Robert E. W. Woodside, present Attorney General.

Lester E. Gore of the Zoning Board is appealing his case . . .

Under the DA, three deputies were assigned to uproot a system of corruption. Their mission has been largely accomplished. Philadelphia's legal authorities are moving fast to ring down the curtain on individuals who operated the system—but more important, builders and real estate men now testify that Philadelphia is about as graftless a place to operate in as they could find in the U. S.

• New system—The investigation showed city graft from building construction takes a definite pattern. To destroy that pattern, Philadelphia has shaken up and reorganized its system of government along new lines.

To understand the administrative changes, it is important to understand the pattern of the graft. Its tentacles reached into various city departments at different levels from the top down. Most deeply involved were the Building Inspection Office, the Bureau of Water, the Department of Public Health, and the Fire Marshal's Office.

I. Building inspection

The principal function of Philadelphia's Bureau of Building Inspection was to regulate the construction and maintenance of buildings in the interest of public safety and welfare. Building projects required a permit from the Bureau and approval of plans. As in many cities, inspectors are employed to see that approved plans are carried out according to regulations.

In the hands of some building inspectors, the authority to require compliance with regulations became an instrument to extract payoffs. Some inspectors levied payoffs on legitimate projects, others feasted on graft from illegal work they winked at. Certain employees of the bureau also used their official office to conduct private business for gain.

The grand jury found that inspectors not paid off would harrass, annoy and delay projects until builders came across with graft. It also charged that inspectors for the Sign Anchorage Division of the Bureau of Building Inspection were exacting tribute, and that hundreds of signs were erected in the city without permits, in violation of zoning laws, and just about all in collusion with the sign inspectors.

Fire Marshal Gallagher was indicted, found guilty . . .

Inspectors received different amounts up to $1,000 and in some cases more. It named a total of 16 individuals who were involved. Of these, two have been convicted, five are awaiting trial, nine have been referred to the City Solicitor.

The Grand Jury also charged the Bureau's chief engineer and an assistant engineer with operating a private business—drawing plans and advising applicants for permits. Construction men paid thousands in fees for plans that were then subsequently approved by these same individuals.

In the Sign Anchorage Division of the department, the Grand Jury found that regardless of whether a sign or advertising display was being erected in compliance with the law, there was a standard fee averaging $10 that was demanded by certain inspectors. One sign firm alone paid a total of $6,000 to the inspectors to overlook violations.

II. Zoning deals

When the Grand Jury looked into operations of the Zoning Board of Adjustment, it found that some of its decisions had been swayed by political considerations.

It accused Lester E. Gore, secretary of the board, and two ward leaders of being involved in cash payments to fix zoning cases.

Gore was subsequently found guilty of perjury and given a 3½ to 7-year

(Continued on page 36)

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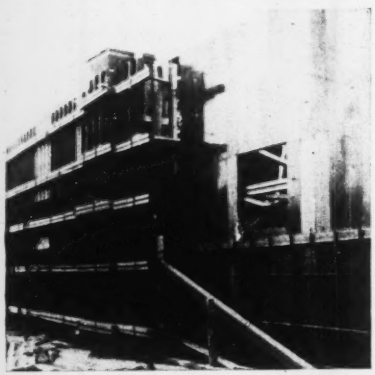

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term and a fine of $3,000. His appeal is coming before the current Superior Court session.

III. Fire Marshal's fees

The Grand Jury found that Fire Marshal George F. Gallagher kept a typewritten list of fees on display for applicants to pay for approval of plans and permits for installation of fuel oil and gasoline tanks.

Minimums were $25, rates varied and were up to a cent-a-gallon for large tank installations. Witnesses said that if they did not pay off, they were subjected to harrassment, delay and captious objections. One company moved from the city rather than go along with the graft payments.

The Grand Jury came up with 380 cases of graft and extortion in less than three years Gallagher was fire marshal. Gallagher was indicted, found guilty and sentenced to three years in jail and fined $4,000. John R. Hopkins, chief assistant, was given a two-year sentence and fined $4,000. Byron Gettis, Jr. got one year and a $1,000 fine. Four others pleaded guilty and were fined, and a policeman assigned to the office still awaits trial.

Typical of the witnesses called is William Pickles, contractor, who said that the graft system was common knowledge in the trade and that fees paid on the regular scale were charged against the job.

IV. Unhealthy tactics

The Grand Jury also probed issuance of permits for plumbing and sewage disposal under the Bureau of Public Health. It accused plumbing inspectors of extorting graft from plumbing contractors.

Seven plumbing inspectors were arrested in connection with the hearing: One was convicted, one committed suicide, three are awaiting trial, two may go before the civil service commission. Two sewer inspectors were arrested and both were convicted.

The jury said plumbing inspectors made specific and repeated demands for payoffs, and if a plumber appeared reluctant to come across he was harrassed and delayed. A few contractors who balked were later brought into line.

Many plumbers paid the necessary graft without waiting for specific demands. Also, plumbers seeking city contracts included in their bids the illegal fees being exacted by the city's own employees. Illegal payments ran into the tens of thousands annually.

(*Continued on page 38*)

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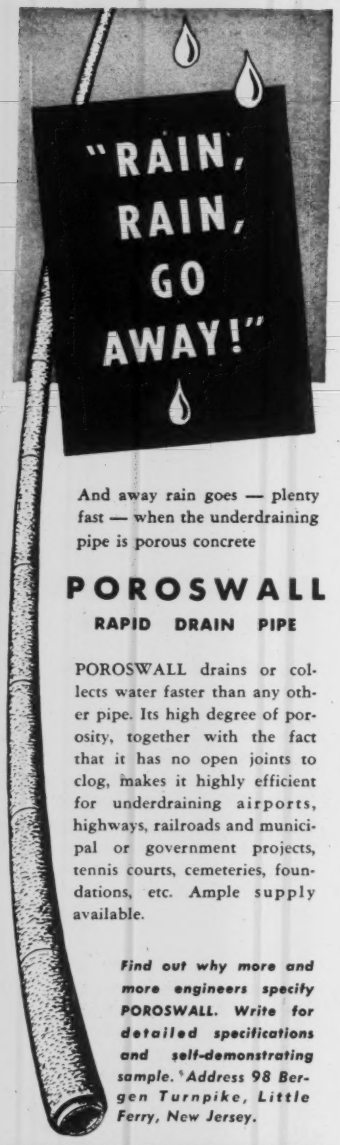

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V. Water payoffs

Investigation into the Water Bureau was hampered because a principal witness—Ernest V. Wrigley, 71, superintendent of distribution for the Water Bureau—committed suicide. Cases of fraudulent dealings were exposed, nevertheless.

The Grand Jury said that Charles A. O'Neill, an executive of the Container Corporation of America, settled a $116,779 water bill with the city for $40,040. It developed that the corporation, through the installation of a water main not listed on city records, daily drew a million gallons of unmetered water. The deceased Wrigley said O'Neill arranged for the installation and paid $800 for it.

Also developed was the story of a contractor who did five jobs over a period of 18 months with city labor and city materials. A sum of $1,490 was paid by the contractor and split among the persons involved.

The contractor's representative even cheated his employer. He got a 10% kickback from the bureau employees to whom he made payments. One water bureau inspector got $250 to $300 a month from a chemical firm. For three years the firm was charged only the minimum figure of $654. The city lost thousands of dollars yearly in water fees it should have received, but didn't.

It was common practice of bureau employees to relocate fire hydrants for a fee. Fees commonly amounted to $50 to $100.

Though death of the main witness prevented indictments and court actions against many water bureau employees said to be involved, many of them were subsequently dismissed from the bureau.

VI. Changes made

What amazed investigators as much as the finding of corruption and extortion was the reluctance of contractors and business men to testify against the grafters. During the investigations, their apathy drew caustic comment from judges in the case, who pointed out that graft and other corruption could not exist if payers had reported those who were participating to proper authorities.

The whole shocking expose helped produce a sweeping change in Philadelphia's city administration. Not only were the guilty prosecuted, but the entire system of government was changed. One of the purposes of the change was to eliminate inherent weaknesses which appeared to breed the graft.

When Mayor Joseph S. Clark Jr. took over the reins of Philadelphia's municipal affairs this January, he became the first Democratic chief executive that the city has had since 1884. At the same time a new city charter, streamlining the structure of government, became operative, realigning the various bureaus and departments.

The Public Works Department which formerly handled almost all city construction activities was split into three departments: of Streets, of Water and of City Property. Splinters of the Public Works Department were apportioned to certain other departments.

Division of independent licensing power among various bureaus and departments, where graft was found to flourish, has been abolished. A Licenses and Inspections Department was set up. It issues every conceivable type of city license and permit required—including those for building and construction. All inspectors are under one executive supervision—the Commissioner of Licenses and Inspections.

Formerly the various departments let all contracts for construction work to be done under their supervision. Under the new organization, a Department of Procurement has been established. It has complete and sole supervision over every contract entered into by the city. It arranges for the writing of specifications, sets the bid date and makes the contract award.

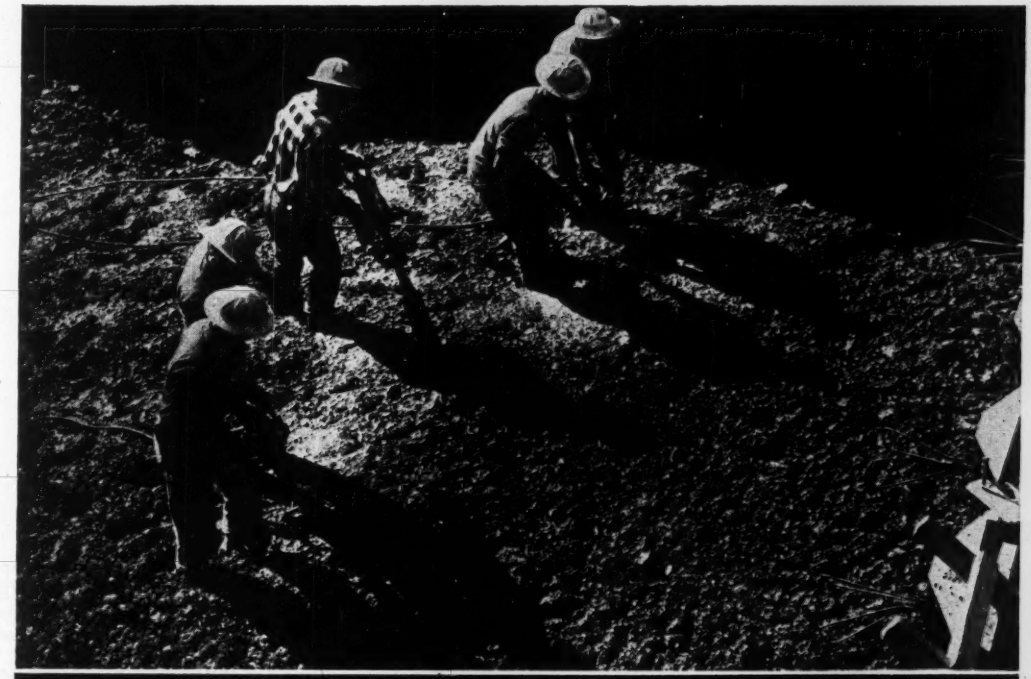
As the jurors emphasized in their findings, the overwhelming number of city employees are honest. It was the system established by a few who were dishonest that corrupted the administration. Under the new city organization many trusted and experienced civil servants still have key positions of responsibility; many were blameless for the system of graft.

Payment of graft has been almost completely eliminated. The city administration has repeatedly asked business men and contractors to pay no graft and to report any attempts at extortion.

A few such cases have been reported and, where evidence justified, employees involved have been fired from their jobs.

Whether payment of graft has ended permanently in Philadelphia remains to be seen. But the city has made a herculean effort to destroy corruption, which may well serve as a model for other cities where graft is still brazen practice.

(*Municipal continued on page 41*)



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Water problems stir cities to action

Solving the continuous water problem of growing municipalities takes time, money and effort on the part of many cities across the nation.

Pittsburgh decided that it needed another report on its water system despite an extensive report on hand.

But in Phoenix, Ariz., a complete program was ready to roll, following approval by the voters of money.

• **Another report**—Pittsburgh's city council will spend up to $50,000 for a complete survey of the municipal water system by Morris Knowles, Inc., a local engineering firm. The appropriation was authorized after the city's law department ruled that the council has a legal right to enter into such an agreement and the right to fix the amount of pay.

The Morris Knowles' survey is to be completed by Oct. 1. It will include a list of improvements, plus their cost, needed to "modernize, rehabilitate and extend" the city water system. The engineering firm also will review available sources of water supply and will determine the value of the system.

A valuation is wanted because of the possibility that council will want to sell its water system to a municipal authority.

The city already has an extensive report prepared by Parsons, Brinckerhoff, Hall and Macdonald of New York, on the system's value. In that report the engineers suggested a price of $40 million. But it was decided more complete study was needed.

• **Program underway**—Voters in Phoenix, Ariz., have just paved the way to the first long-range water supply plan in the city's history by approving a $7-million bond issue. The money will be used for a major expansion of the municipal water supply and distribution system, expected to take care of growth for the next 10 years, or until Phoenix has 285,000 users. It is the first phase of an overall program designed to fill the city's water needs for 50 years.

The general obligation bonds, which will be retired from municipal water system revenue, were approved by a vote of 2,300 to 1,404.

Improvements, designed by Headman, Ferguson & Carollo, Phoenix engineers, will be completed by 1955. Expansion will increase the present supply of 74 mgd to 114 mg.

Improvements include:

• An increase of 40 mgd in pumping capacity at the Verde filter plant.

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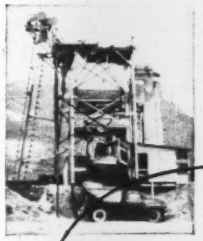

Two men ran this Noble batch plant with 28S Koehring mixer

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"We liked the Dumpcretes because they're fast," says Mr. Waigand, "and because they place equally well into forms, buckets or collecting hoppers. They're rugged too, and cause little downtime."

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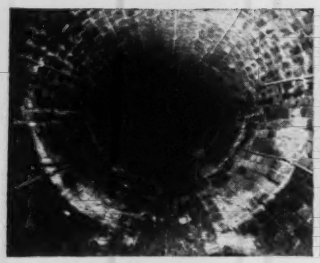

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This job, and many other types of "GUNITE" jobs which we have done, are illustrated and described in our new 64-page general bulletin A2400. A request on your letterhead will bring you a free copy by return mail.

We will be pleased to cooperate with you on any of your problems.

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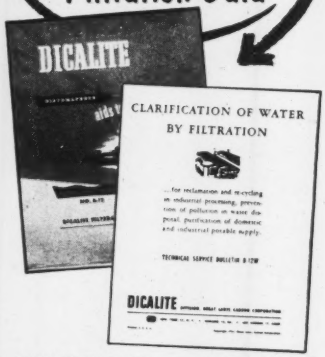

BULLETIN B-12 on general filtration principles; **BULLETIN B-12-W** details information on filtering potable and waste water.

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- Construction of a pre-sedimentation basin next to the Verde plant.
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- Extension of 60 cycle power to the Verde plant.
- Construction of a new filter plant and reservoir with a 30 mgd capacity. This unit will utilize canals of the Salt River Valley water users system to bring Verde water close to the city where it can be processed. The present filter plant is 20 mi from the city.

No change in policy for NYC water supply

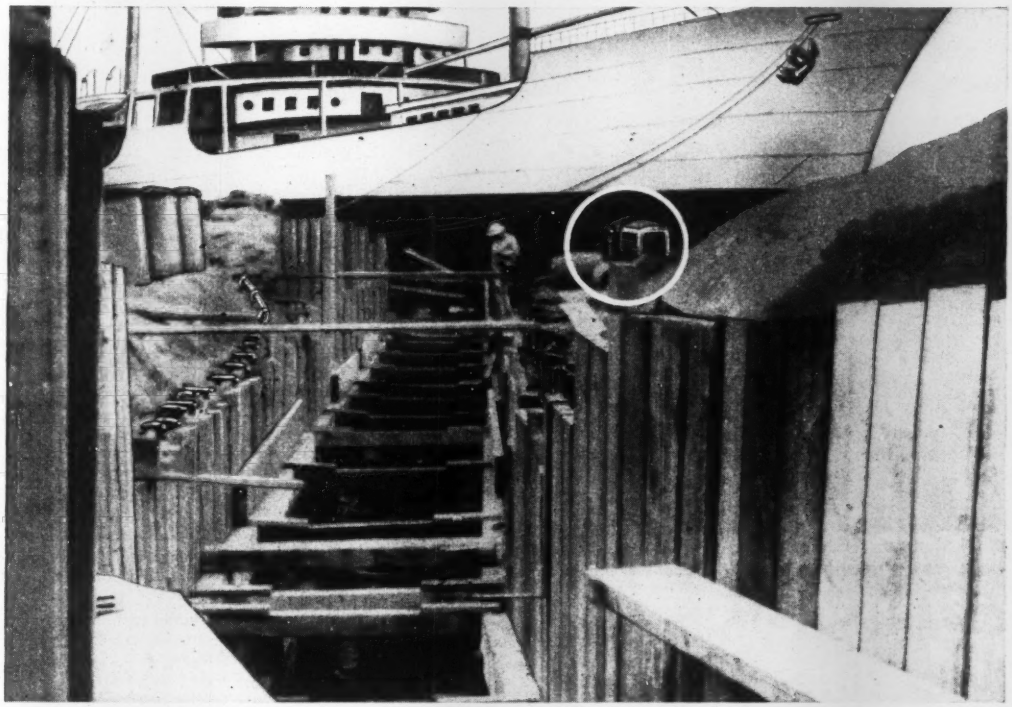
Mayor Vincent Impelliteri helped quiet most, but not all, unrest over New York City's water future by acting last week on recommendations made to him April 9 by a citizen's advisory committee. The Mayor took three major steps:

- He accepted the committee's recommendation that plans for a third state development in the Delaware Basin be carried forward. This recommendation confirms present policy, since the $144-million development of a reservoir at Cannonsville, N. Y. already has state and city sanction. A petition to cover its additional diversion of interstate waters was filed with the U. S. Supreme Court last month.
- He revealed that Karl R. Kennison will succeed the late John M. Fitzgerald as chief engineer of the city's Board of Water Supply. Kennison had been chief engineer of Boston's Metropolitan District Commission. In addition to Kennison's appointment, Professor Rolf Eliassen, of MIT, was named a consultant to the board. Other consultant appointments are said to be contemplated.
- He replied, to the committee's recommendation that "independent consultants and engineers" spend two years studying the Hudson River as a permanent supply, by expressing confidence in the BWS, with its newly added talent, to "carry out such engineering studies as may be required."

This action was construed by some as virtual rejection of Hudson use recommendations of the consultant panel, W. W. Horner, Louis Howson, Thorndike Saville and Abel Wolman (ENR Dec. 13, 1951, p. 29). BWS has opposed the Hudson except as a last resort: Kennison has been a proponent of upland sources for Boston. Some influential citizen groups still back use of the Hudson.

(*Municipal continued on page 44*)

STANG WELLPOINTS HALVE TRENCH CONSTRUCTION COSTS



Freighter floats alongside dock in ship's channel while trench bottom is dry below level of low tide.

Digging a narrow trench in saturated soil five feet below low tide to run into a ship's channel would have been a real problem without Wellpoints. Because working space was cramped, the sides of the trench could not be sloped and the water-bearing material would have required expensive heavy steel sheeting and bracing. STANG WELLPOINT EQUIPMENT effectively predrained the soil and so reduced lateral pressure that it was only necessary to place timbers along the sides supported by very light bracing, cutting costs in half.

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BRIDGE AND TUNNEL link between Norfolk and Portsmouth, Va., makes a short drive out of what had been a long roundabout journey. Combination of bridge and tunnel was necessary to keep one of the branches of the Elizabeth River clear.

Over and under project links cities together

When the Elizabeth River Bridge-Tunnel to Portsmouth, Va., is opened May 23, Norfolk, Va., motorists will have a short ride to Portsmouth and a direct highway link to the rest of Virginia.

The restrictions of geography and federal regulations made necessary the building of both a bridge and a tunnel over the Elizabeth River. (ENR Nov. 16, 1950 p. 44).

The river divides at Norfolk into an eastern and southern branch, with Berkeley and South Norfolk lying between the two streams. Army engineers forbade construction of any type of bridge between the Naval Shipyard on the southern branch in Portsmouth and open sea. In making the link it was necessary to tunnel under the southern branch, while the eastern branch was bridged.

• **Contractors and engineers**—The whole project was a joint venture between Merritt, Chapman and Scott of New York City and Tidewater Construction Corp. of Norfolk, Va.

The two contractor groups split the contract work between themselves with the bridge going to Tidewater and the tunnel to Merritt, Chapman and Scott.

Engineers on the tunnel were Parsons, Brinckerhoff, Hall & Macdonald of New York. Bridge engineers were J. E. Greiner Co., of Baltimore.

• **Bridge**—The estimated cost of the bridge was $7,415,000. The bridge is 2,135 ft from abutment to abutment providing a four lane roadway.

The river channel is spanned by a double-leaf rolling-lift bascule draw. The draw has a horizontal clearance of 150 ft between fenders. When the draw is closed the vertical clearance above mean high water will vary between 50 ft in the center and 45 ft at the fender lines.

It is estimated that 90% of the water traffic will pass under the bridge without requiring the opening of the draw.

• **Tunnel**—The tunnel part of the contract including engineering and right-of-way is estimated at $15,285,000. The entire tunnel was 3,350 ft.

The tube section was built in seven 300-ft sections pre-fabbed and sunk in a trench cut in the river bed.

The sections were built by the Bethlehem-Sparrows Point shipyard at Sparrows Point, Md., and towed to Berkeley. Each section is a steel shell, 31 ft in dia. The sections were sunk by pouring precise amounts of additional concrete into them.

After the sections had been placed at the river bottom, the bulkheads sealing the ends were cut and the 22 ft roadway laid.

• **Financing**—The bridge-tunnel is financed by a $23-million bond issue to be paid off out of income by 1980.

If sufficient revenue comes in the bonds can be retired earlier than scheduled and the tunnel made toll free before 1980.

Motorists using the tunnel will pay 15¢ an axle, plus 5¢ a rider in addition to the driver. Users of the bridge alone will pay nothing. Norfolk is paying the tunnel commission approximately $190,000 a year to keep the bridge tool free.

Community sells itself on sanitation

by E. E. Halmos, Jr.
Managing Editor

The Northern Kentucky Sanitation District No. 1 will open bids this month for construction of a $1,500,000 sewage treatment plant—and thereby present an example of faith and energy of interest to most U.S. municipalities.

Because here is a district that includes within its borders 16 separate communities ranging from tiny hamlets to two substantial river towns; two counties; a couple of townships; a considerable concentration of industry—and 136,000 people. It has succeeded in putting itself together, getting preliminary construction and engineering work done, clearing legal obstacles, and is now ready to build—all without a nickel of federal or state funds, but on a solid financial basis nevertheless.

And it is as nearly a one-man story as any community effort can be—a story of a non-professional citizen who expended endless energy and time, and talked himself dry to sell the idea of the need of sanitation to the residents of the area, babied the growing district—and succeeded in providing a demonstration of the workings of enlightened self interest.

• **Scene**—The area within the sewage district fans out from the two river cities of Covington and Newport, Ky. (Kentucky has no "villages"), across the broad Ohio River from bustling Cincinnati. The cities cluster about the point where the meandering Licking River joins the Ohio, and represent a conglomeration of highly industrialized areas and residential tracts.

More importantly—from a geographical point of view—the district is almost in the exact center of the long course of the Ohio River—which a group of eight states (including Kentucky) have agreed must be cleared of pollution to restore its natural beauty and economic value. Neighboring Cincinnati is in fact the headquarters of the eight-state Ohio River Water Sanitation Commission (ORSANCO), and Cincinnati's energetic chamber of commerce has been a main spark behind the drive for river cleanup.

Only a very few of the little Kentucky cities have anything approaching a sewage-treatment works. Most are "sewered"—to the extent that pipelines collect sewage and storm water, dump it directly into the Ohio.

• **History**—Historically, there were two events which were of major importance to the district. The first in importance was agreement by Kentucky with seven other states to join in an attempt to clean up the Ohio River (ENR Mar. 18, 1948, p. 76).

That agreement was embodied in the interstate compact that was the basis for ORSANCO and for the long-

SALESMEN OF PROGRESS—Commissioners of Northern Kentucky sewage district set an example of thrift, progress, left to right are: Harry Schaeper, George Beuttel, W. D. Anderson (general manager) and Richard G. Howes.

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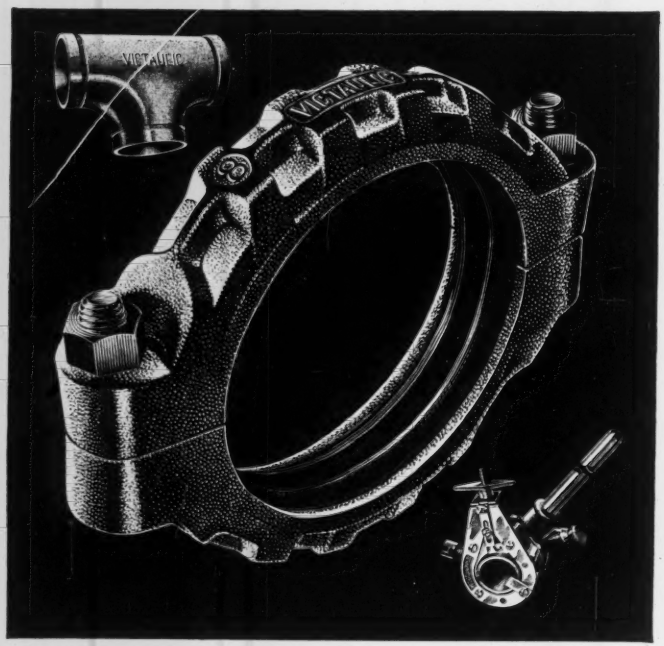

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continuing attempts to restore some of the natural value of the river's water both to industry and for recreational and esthetic reasons.

Secondly, the State of Kentucky had backed up that agreement in 1946 with a state law (KRS 220) which authorized the creation of sanitation districts on proper application.
factories.

• **And the man**—That was the starter for the man on the scene.

Short, well built, quietly earnest W. D. Anderson had just completed a wartime tour of duty with the U. S. Army, and had returned to his job as secretary of the Covington Chamber of Commerce. He is no sanitary engineer or sanitation specialist—but he realized that his town and the others soon would have to face some hard facts: they'd have to build sewage disposal facilities; the cities had best do something if they were to maintain themselves as attractive places to live, work, and to set up

• **Tough selling**—What was needed was a selling job, and Anderson undertook it, sometimes alone, sometimes with help of other Chamber members, or civic-minded helpers.

"The thing we had to do," he says, "was not only to sell the need for the disposal works—but to convince local people that it was worth their while to spend the money.

"They had to be convinced that not only would they be helping themselves—but that they'd be setting a shining example for other areas, particularly those upriver, to follow. We were not only going to talk about cleaning up the river—we were going to give evidence of our faith by actually doing something."

The selling was no easy job. Anderson and his friends knew little about the technical jargon of the sanitary trade (the exact definition of B-coli is still something of a mystery to him), but they knew very well what would impress their neighbors.

"We put it on the average man's terms," he adds. "We didn't have to prove pollution by charts and graphs—all we had to do was show them the dirty scum the river left after high water had passed on down; all we had to do was explain to parents that filthy streams are a direct menace to the health of their children; to show industry that with one of the greatest streams in the world running by their doors, they couldn't use the water to point out to townsfolk that the water intakes for their drinking supply were

(*Continued on page 48*)

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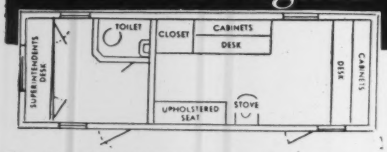

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check-by-jowl with the outfalls of sewage lines."

The strategy worked. After months of talking, travelling, arguing, convincing, the cities and counties fell into line, and the district was created under an order of the state Board of Health, at the end of 1946 and the job got under way.

• **Then money**—In the legislation authorizing formation of the district, get projects started. This was a provided a means of obtaining funds to get projects started. This was a provision that the district could collect a tax of 5¢ per $100 of real property tax assessment for one year only. This was later extended to three years—and the district thus collected a total of about $85,000 in the three years 1948-1950.

With funds thus assured for part of their work, the three businessmen-commissioners got to work, and in August, 1947, retained the Cincinnati engineering firm of Vogt, Ivers, Seaman and Associates. Riding their own faith in the district and the men who headed it, these engineers submitted a plan within less than a year and a half, that was approved by the district and the state health board.

It was a thrifty plan—making use of the existing outfall lines to collect sewage from those areas so covered, running a collector line along the Ohio and Licking river levees down to the site of the proposed disposal plant on the west boundary of the city of Bromley. The total cost, said the engineers, would be about $6.1 million (exclusive of land and rights-of-way), of which the plant itself would cost $1.5 million.

Meanwhile, the commissioners needed more money. Being of no mind to beg from higher governments, they did what good businessmen do—borrowed from their local banks to the tune of $500,000, securing their loan with the district's credit, its assets, and the prospect that revenue bonds, to be issued later and paid for through sewer rental charges, would wipe out the bank debt.

That worked out too—and so no state or federal money has entered the picture.

The district hasn't decided yet the exact amount it will charge users for sewer rentals—the exact amount will depend in part on how the bids go this month. But they figure the charge (to be billed directly by the district and based on water use) may come out to something less than $1 per month per home.

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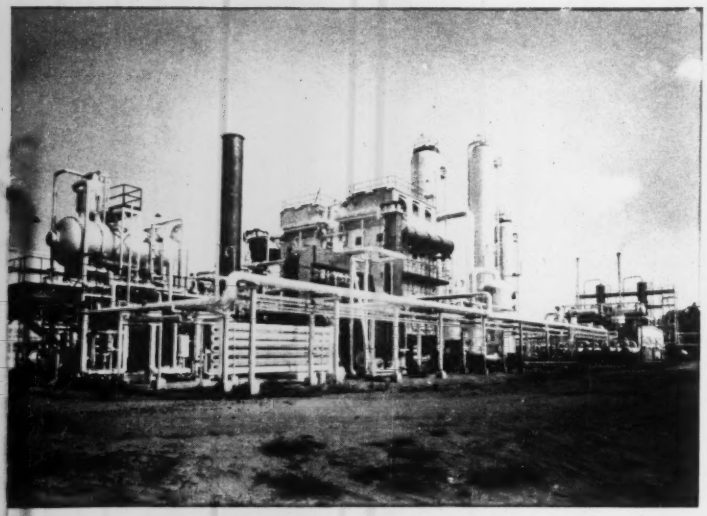
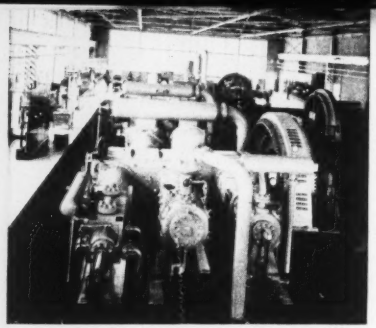
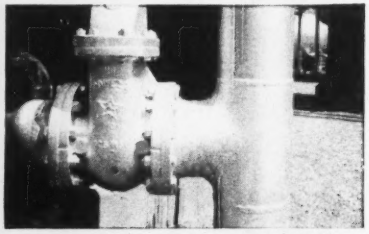


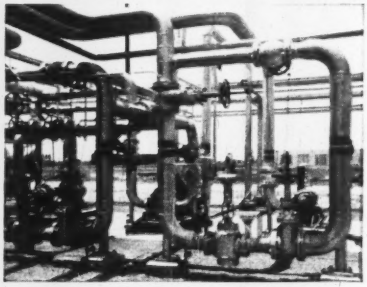
Piping at new Mississippi Chemical Corporation plant handles explosive gases and acids at high pressures. That's why leakproof welded piping was specified, and TUBE-TURN Welding Fittings and Flanges used throughout. Process piping handles hydrogen, nitric acid, anhydrous ammonia, etc. Engineering and construction of entire plant, which produces synthetic nitrogen fertilizer, was handled by The Girdler Corporation.



Design and installation of piping was simplified by obtaining all the necessary types of welding fittings from one reliable source. TUBE TURNS, INC. offers the world's broadest line of welding fittings and flanges—available in a wide range of types, sizes, and more than 40 different alloys.



125-lb. cast iron valve is secured to process line with TUBE-TURN Welding Neck Flanges. True circularity and uniform wall thickness of TUBE-TURN Welding Fittings, such as Welding Tee (right) and Welding Reducer (left) assure proper fit and speedy fabrication. Welders know they can depend on accurate line-up with TUBE-TURN Welding Fittings.



Welded piping using TUBE-TURN Welding Fittings keeps flow resistance and pressure drop to a minimum —an important consideration where so much piping is used. The complete Mississippi Chemical plant is noteworthy for high efficiency throughout . . . unit energy input is lower than in any other similar plant.

Want Materials Data?

Tube Turns, Inc. has prepared a booklet giving specifications, properties, and welding procedures for different pipe and welding fitting materials. If you'd like a free copy for your file, write us today.

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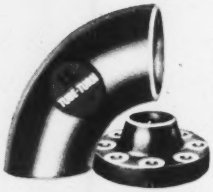

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TUBE TURNS, INC.
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Detroit readies sites for private builders

A major slum clearance program involving 129 acres on Detroit's lower east side is nearing completion—at least as far as the city and federal government are concerned. From here on private enterprise will be carrying the ball, but the ground has been carefully prepared for it.

• **The plan**—The original idea for the program was born over six years ago under the administration of the late Mayor Edward J. Jeffries of Detroit. The plan materialized under his direction in 1945, and was to be the first urban redevelopment program for the city. Unlike former low-cost housing projects the new plan called for development of the area by private enterprise. Condemnation of the property began immediately but progress was hampered by the war and its after-effects, and it wasn't until after 1950 that any appreciable amount of the land was purchased by the city.

Today, however, the city of Detroit owns the complete 129 acres at a total purchase price of $6,284,000. The federal government will repay $4,761,000 of that cost by an outright grant.

The City Planning Commission has rezoned the area. Its master land-use plan calls for school and recreational facilities, small multiple dwellings, apartment buildings, private homes, commercial buildings, and a stretch of a newly proposed express highway.

In addition, Wayne University will use approximately six acres of the new development as a site for a new $4-million medical center.

Zoning calls for land use as follows:

- 35 acres—two-story garden type apartments
- 11 acres—tall apartment buildings
- 3 acres—commercial buildings
- 6 acres—Wayne University medical center
- 11 acres—Hastings Expressway
- 18 acres—school and recreational area
- Remainder—private residences

• **The progress**—Demolition and clearance of the land has been in progress since the city began to acquire the property. To date approximately 10 city blocks have been completely cleared and some 100 additional parcels of land are under contract for demolition. In all, about 300 buildings either have been torn down or are in the process of being torn down.

Relocation of some 2,100 families, former property owners and tenants in the slum section has been a

For above-ground or under-ground belt installations, Goodman Manufacturing Company uses Twin Disc's 12.2" Hydraulic Coupling between A. C. Motor and speed reducer on its type 97HC30 Belt Conveyors. Couplings are available for electric motors and engines developing from ¾ to 700 hp.

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For information, ask for Bulletin 144-B, or call your nearest Twin Disc Hydraulic Coupling dealer.

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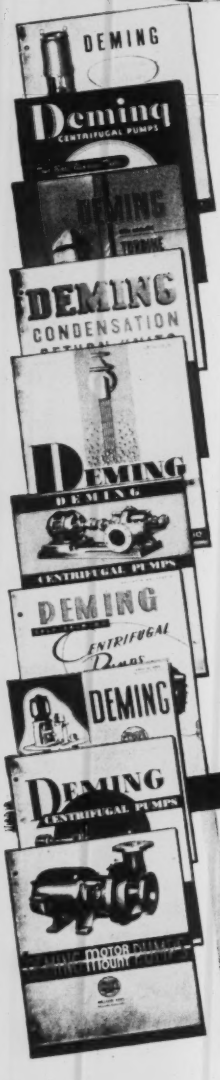


DEMING
Industrial
PUMPS

major undertaking of the City Housing Commission. Those families eligible by virtue of low income to be placed in city low-cost housing projects were placed there. Qualifying veterans were helped to find housing in veterans' housing projects. Other families displaced by the redevelopment program have purchased, rented or leased property elsewhere.

• **What next?**—Current city plans call for expenditure of another estimated $1,240,000 for new improvements in the area. These will include new streets, sidewalks, sewers, water lines, etc. to be completed within the next few months. After that is done, the project will be pretty well finished as far as the city is concerned. The land will have been cleared, construction replanned, and the whole area put in readiness for its new tenants. Who those people will be, and what they will make of the new community will be up to Detroit's citizens.

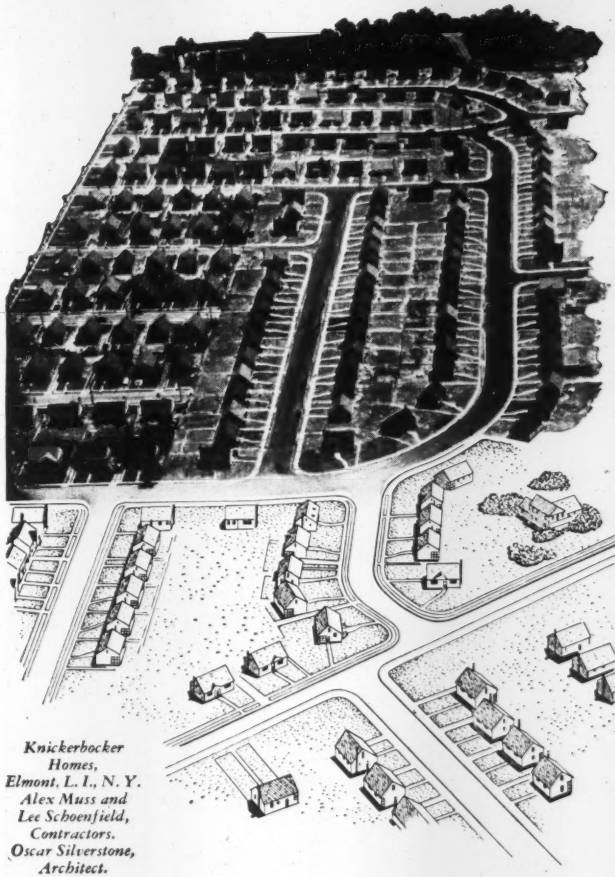
Within the next 30 days the city will sell, by public auction, all of its revamped 129 acres—with the exception of parcels already earmarked for the highway, medical center, etc. From 1,600 to 1,800 families will be housed in the area when rebuilding is complete.

NYC reports on housing

New public housing apartments were completed by the New York City Housing Authority at the rate of more than 700 a month in 1951, and almost 63,000 families were living in authority projects at the end of the year, Chairman Philip J. Cruise stated in the authority's 18th annual report, released last week.

The report revealed that seven housing projects were opened and eight others completed during that period to provide a total of 8,700 new apartments, and that the groundwork laid during the year in planning, site clearance, and new construction would result in the completion of 8,500 additional apartments and permit the start of 12,000 others during the present year.

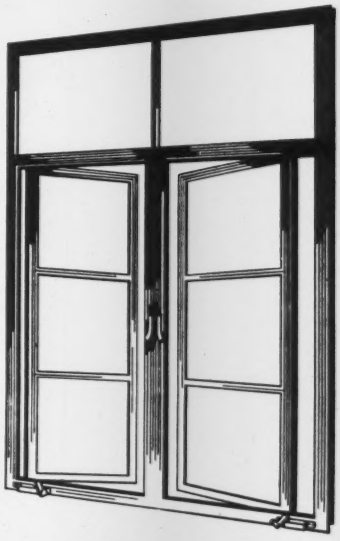
The authority's authorized program at the end of 1951 consisted of 53 completed projects with 59,458 apartments, six partially occupied projects with 9,696 apartments, eight projects under construction with 9,182 apartments, and 27 projects in planning with 32,055 apartments—a total program of 94 housing projects that when fully completed would provide homes for 110,391 families at a cost of $1.2 billion.



Knickerbocker Homes, Elmont, L. I., N. Y. Alex Muss and Lee Schoenfield, Contractors. Oscar Silverstone, Architect.

Architect Oscar Silverstone says:

"Truscon Series 5 Casements gave us the lowest possible window unit cost in the Knickerbocker Homes project."



Where lowest-cost-per-foot initial building costs are imperative . . . and where lowest maintenance cost-per-year in tenancy is essential . . . builders' figures have proved the unequalled efficiency of Truscon Residential Steel Casements.

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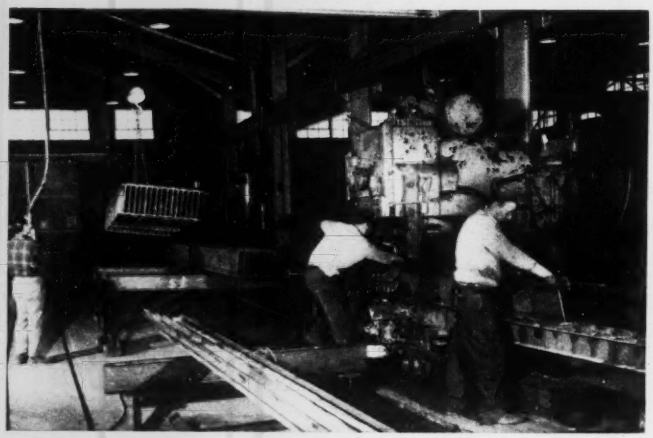


Out of this shop where, on an assembly-line, beams and other building components are cut to size, punched for field bolts (left) and welded (right), then stocked for shipment ➡

Factories mass produce factories

Frederick S. Merritt
Associate Editor

PREFABRICATORS with a line of "packaged" industrial buildings are doing a land-office business—far better than had been predicted five years ago.

In 1947, ENR surveyed this young industry and reported: "Economy and availability of standardized, prefabricated industrial buildings are proving so attractive to purchasers that production is being stepped up. . . . Most manufacturers report their plants are now operating at better than 60% of capacity and they are increasing production to meet an ever rising demand" (ENR Nov. 13, 1947, vol. p 667).

A second survey, just completed, indicates that expansion of the packaged-plant industry during the past few years has reached boom proportions. While no figures are available for the industry as a whole, growth of individual fabricators has been phenomenal, with the greatest expansion taking place last year.

• **Success story**—One prefabricator who turned out only 20,000 sq ft of building in 1950 produced 110,000 in 1951. Another, who turned out 500,000 sq ft at the beginning of World War II and 700,000 in the first postwar year, furnished 2,000,000 sq ft in 1950 and 3,000,000 in 1951. Still another produced twice as much in 1950 as in 1945 and then doubled production again in 1951. Many others did as well.

There is no telling how much larger the boom would have been last year if fabricators could have obtained more steel.

Almost all the prefabricators report that the demand for packaged plants is still rising. They plan to increase production of these buildings even more both this year and next.

• **Prices low, delivery fast**—Packaged plants are obtainable in various metals and timber, and in convenient dimensions. More varieties of design are also available than in 1947. Then, most manufacturers offered only metal or plywood walls; now they are offering a wider selection, including masonry, to improve their competitive position with custom-built plants.

Prices do not seem to have changed. The range still is $1 to $2.50 per sq ft.

Delivery appears to have been speeded up, however. In 1947, prefabricators reported they could deliver a packaged plant in 2 to 26 weeks; now they say they can deliver in 2 to 16 weeks, depending on the size of the structure. Many of them can get building parts to a site in less than a month.

As in 1947, almost all the manufacturers supply only the building frame and enclosure. The owner must install his own floors and mechanical and electrical equipment—lighting, power wiring, heating, sanitary facilities and piping.

Few prefabricators will erect the structures, but some have a tie-in with a contractor who will. They generally maintain competent engineering organizations to cooperate with owners, contractors and architects.

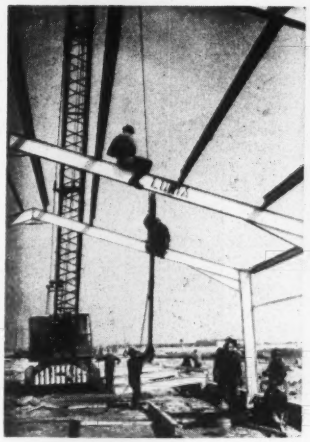
• **Key to industry's growth**—Herbert B. Luria, president of Luria Engineering Corp., one of the prefabricators, attributes the boom to the need for speedy erection of durable structures during the postwar industrial expansion.

"More than ever," he says, "industrial concerns in 1951 discovered in standardized construction a way to combine speed with durability, flexibility and economy. They found they could bypass lengthy planning periods, save critically needed engineering hours and conserve the labor supply."

As an example of the speed with which a packaged plant can be delivered, he recalls how Luria helped meet an emergency situation in New Jersey. A plant had been destroyed by an explosion and an immediate replacement was needed. His company had a steel building at the site before the debris was cleared away.

When the Port of New York Authority recently moved from Newark Airport to New York International Airport, Luria delivered two 20,000-sq ft buildings within ten days of receiving a verbal order.

• **Purchaser has many options**—But speed and economy are not the only reasons for the wide acceptance of packaged plants. Robert Macomber, executive vice president, Macomber, Inc., another prefabricator, points out:



Came this plant Rigid frames, assembled by bolting at the site, form a 60x660-ft "standardized" building at High Point, N. C. The owner had selected it from a catalog. (Luria Engineering Corp. photos.)

"Packaged buildings are most acceptable when they are made of standardized parts which may be combined to form buildings completely flexible as to width and length."

Many of the prefabricators have adopted this principle. Thus, it is possible to obtain buildings in a bearing-wall design with a length that is some multiple of 2, 4, 6 or 8 ft, the structure being extended by addition of standard-width wall and roof panels. Or buildings may be obtained with a length that is some multiple of 10, 12, 16 or 20 ft in skeleton-frame construction, where complete bays are added to expand the structure.

Widths of buildings vary similarly. Depending on the structural framing used, clear spans range up to 200 ft. When desired, wider structures may be obtained by placing standardized buildings side by side, substituting columns for the common sidewall. Clear heights available range from 6 to 30 ft.

Wall panels may be solid or incorporate windows or doors, but in any case are interchangeable. Thus, windows and doors can be located where desired along the exterior. Similarly, choice of louvers in gable panels or ridge ventilators is left to the purchaser.

Structural framing varies with the prefabricator. Buildings may have roofs supported on purlins and girders, arches, trusses or rigid frames; or they may have no framing at all.

• **Frameless building**—Behlen Manufacturing Co., for example, produces an all-metal structure of monocoque construction; it has no columns or beams. It consists of deeply corrugated metal sheets bolted together to form a rigid frame. Behlen claims that "each continuous panel becomes in itself a support arch with the strength of an I-beam of equivalent weight."

Such structures may be adapted for use with long spans when required. Last winter, Behlen supplied a 100x552-ft by 17-ft high frameless warehouse building for Union Stockyards Co., of Omaha, Neb. (Some structurals were incorporated to support the roof load, because of the great width of the structure.) Despite adverse weather, the contractor, Mainelli Construction Co., Omaha, put the building up in just 48 working days. The erection crew's main job was assembling and bolting together prefabricated 43-in. wide, 13-ga aluminum panels that had been cut, gang punched and corrugated at the factory.

• **Steel skeleton design** — Macomber, Inc., makes two types of buildings with steel frames. In both, purlins and girts may be open-web members with nailable steel V-section chords. Hence, any type of roof or wall material that can be welded or bolted to steel, or nailed to wood, may be specified for these structures.

One type of building is of conventional structural steel construction. It is supplied with spans up to 130 ft and with trusses spaced up to 40 ft apart.

The second type, called V-Lok, is available in standard 20x20-ft bays (ENR Sept. 6, 1951, p 119). Structural members for this building are assembled by slipping a lug on the end of one in a groove in another.

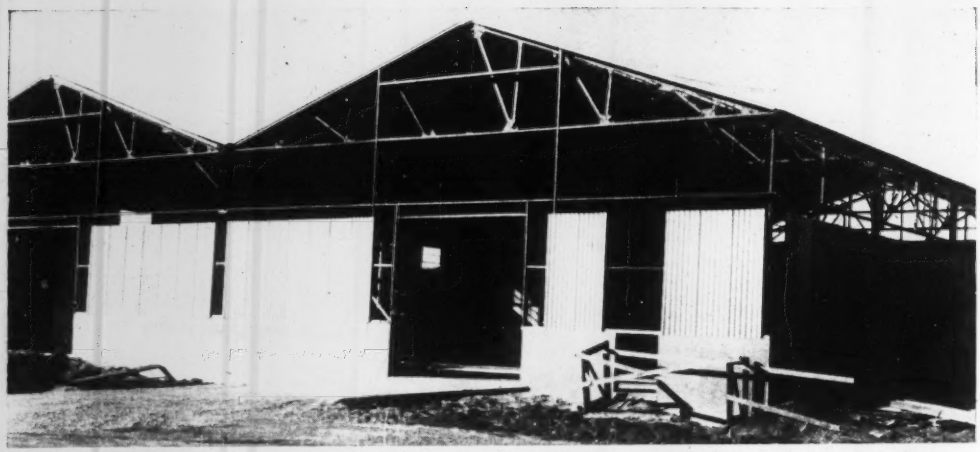
• **Variety of framing offered**—The Steelcraft Manufacturing Co. prefabricates buildings with either bearing-wall or skeleton construction. Load-bearing structural wall panels are used for buildings up to 24 ft wide. Truss-type buildings up to 32 ft wide are furnished completely fabricated and "knocked down," with pieces closely nested for shipping convenience. Also, rigid frames are available with clear spans up to 80 ft.

A complete 200x320-ft rigid-frame manufacturing building recently supplied by Steelcraft cost the owner only $3 per sq ft in place. And here, in brief, is what he got for his money: asbestos-cement roof insulated with aluminum foil and 1-in. thick glass-fiber batts; continuous pivoted steel sash over 8-in. concrete-block walls; 5-in. reinforced concrete floor; double-swing steel doors; personnel doors; six 20-ft sections of heat-valve ventilators; copper gutters, leaders and flashings; lighting and sprinklers.

• **Rigid-frame building**—Luria Engineering Corp. produces a standardized building of rigid-frame structural steel construction. Frames made of wide-flange sections are designed for spans of 32 to 140 ft and are spaced 20 ft apart. Purlins are light-beam sections; girts are channels. Members are assembled at the site with bolts.

Luria also manufactures four types of standardized airplane hangars. Two of these have an inverted-V shape roof supported on either rigid frames or trusses; the other two have arched roofs supported on either solid-web members or trusses.

Like many of the other prefabri-



TRUSS CONSTRUCTION was selected for this building near Cincinnati, Ohio, from a Steelcraft catalog. Spans are 50 ft.

cators, Luria has set up an assembly line for fabricating its standardized buildings. Almost all operations are mechanized. Cranes transport the steel from station to station for marking, cutting, hole-punching, welding and painting. At the plant, a large yard served by a railroad siding, is available for storing the members until needed for shipment.

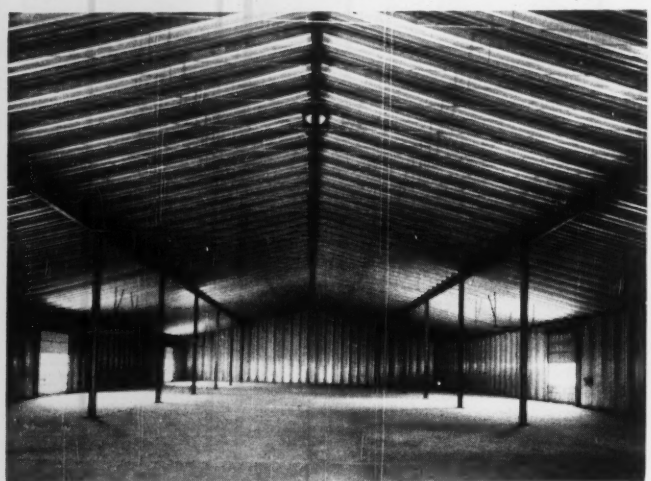
• **Arched building**—Stran Steel Division, Great Lakes Steel Corp., uses light-gage steel arches and purlins to support the roofs of its "Quonset" buildings. Purlins and light-gage wall studs are of the nailable type. With multiple-arch construction, factories of almost any desired length and width may be built (ENR Dec. 20, 1951, p 34).

Regardless of the framing adopted, most prefabricators report they have no trouble with building codes. Some offer lower cost, lighter weight designs for use in parts of the country where lighter roof loads are permissible; some heavy up for applications in earthquake areas. Some furnish standardized buildings capable of carrying extra heavy loads, like bridge cranes, for example.

• **Future prospects**—The wide variety of designs available, the low price, and the speed of delivery and erection make it highly probable that the boom in prefabricated industrial buildings will continue.

But there still is great opportunity for improvement in both design and construction methods, not only to improve economy, but quality as well. Insulated structures at lower costs, for example, could be built even today, with walls and roof of sandwich construction (insulation factory-built into large-size panels).

Standardized built-in mechanical and electrical equipment could be listed in manufacturers' catalogs. Heating and air-conditioning units and prefabricated electrical substations, for example, could readily be incorporated now in designs for packaged plants.



MONOCOQUE CONSTRUCTION was adapted in this Omaha, Neb., building to a 100-ft width. For narrower structures, the corrugated roof needs no framing.

• **Companies reporting**—The following companies supplied information for the ENR survey: Luria Engineering Corp., 500 Fifth Ave., New York 36, N. Y.; The Steelcraft Manufacturing Co., Rossmoyne (Cincinnati), Ohio; Macomber, Inc., Canton, Ohio; and Behlen Manufacturing Co., Columbus, Neb.

Also, Maryland Metal Building Co., Baltimore 30, Md.; Brookville Manufacturing Co., Brookville, Pa.; Carew Steel Products Corp., York, Pa.; Armco Drainage & Metal Products, Inc., Middletown, Ohio; Kyle & Company, Fresno and Stockton, Calif.; Howard Steel Co., Davenport, Iowa; Soule Steel Co., San Francisco, Calif.; Texas Housing Co., Dallas, Texas; Butler Manufacturing Co., Kansas City 3, Mo.; United Steel Fabricators, Inc., Wooster, Ohio; George L. Mesker & Company, Evansville, Ind.; International Steel Co., Evansville, Ind.; and John Cooper Co., 299 Second St., Hackensack, N. J.

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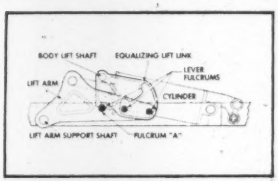
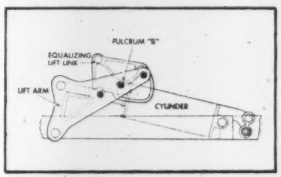
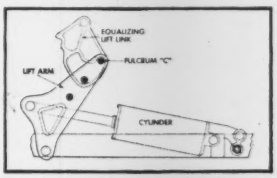


Scientifically positioned fulcrums and transfer linkages automatically "shift" the load from "low to high." As the piston moves back FULCRUMATIC'S tremendous initial leverage goes into action at fulcrum A. The body smoothly moves upward . . . with all lifting force efficiently applied to the load.



As the piston moves back, lifting effort is transferred to fulcrum B, right. Damaging lift-shock has been avoided by the smooth upward action of the linkages . . . a FULCRUMATIC feature that eliminates single points of strain. Decreasing leverages permit the pump to maintain a more uniform pressure without using full pump capacity.



In seconds the body is in full dumping position at fulcrum C, left. Oil or hydraulic pressure gauge readings show that pressures are relatively the same at each fulcrum. By keeping the pressure constant at each stage of the lift, damaging excessive power surges are eliminated, increasing the life of entire hoist assembly.

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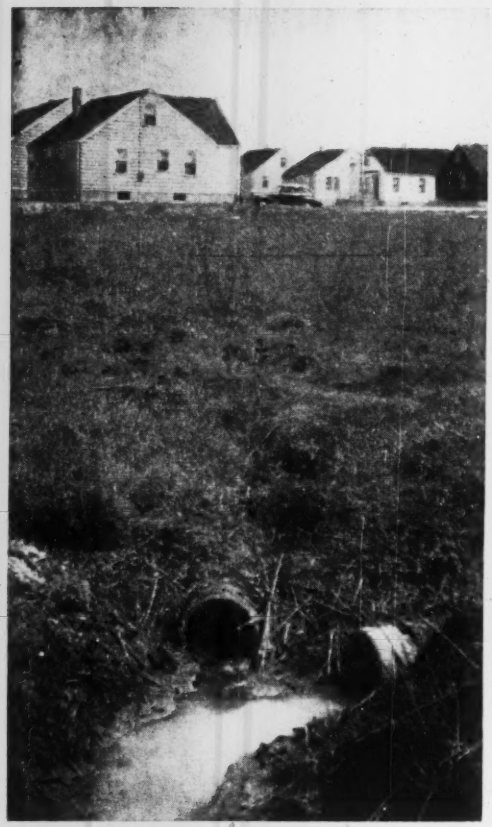
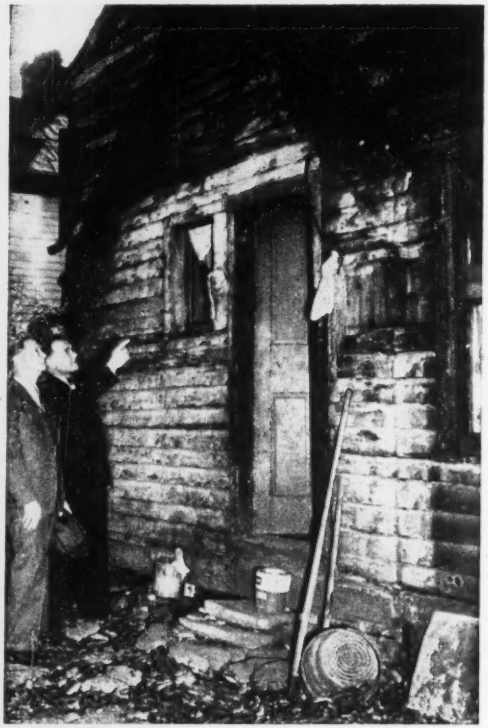
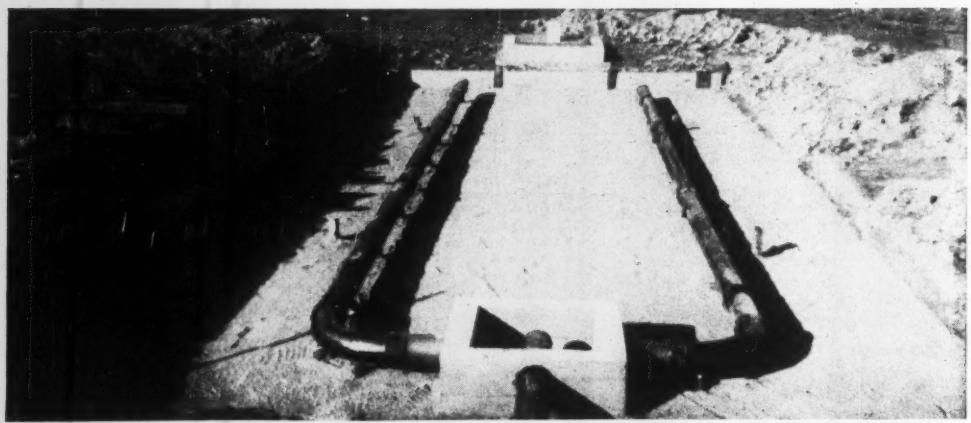


NEW SUBDIVISION: NO THOUGHT TO SEWAGE—Local health departments must see this doesn't happen, by requiring plans for acceptable public or private disposal in advance.

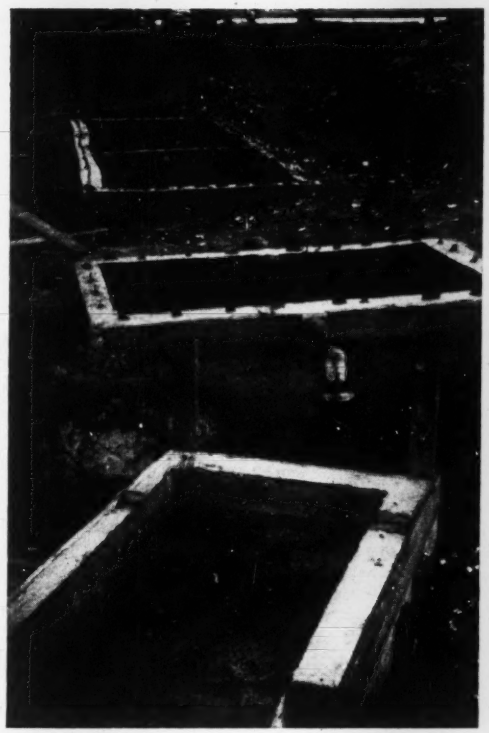


NEGLECT—Established standards, rigid inspections and coordination with housing agencies can beat the slum problem. Housing is just one problem on which public officials and consulting engineers might use experience of the public health engineer.

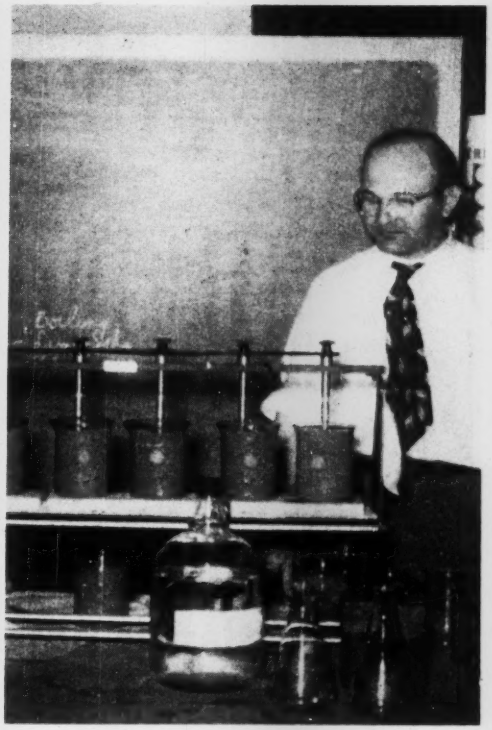
Engineered



TO MAKE SEPTIC TANKS WORK in soil of low absorptive capacity, local health agents can see that sand filtration systems are installed to receive effluent. Some 17 million people in the U. S. depend on septic tanks.



PRIVATE SEWAGE DISPOSAL needs public health engineer inspection. Septic tanks still serve a great many people, and it is important that they work. This restaurant system has two-compartment tank, dosing siphon and distribution box.



EDUCATION—training of technicians and inspectors, as well as education of the public—is a vital function. State and federal health agencies do much of this. But much remains for local public health engineers.

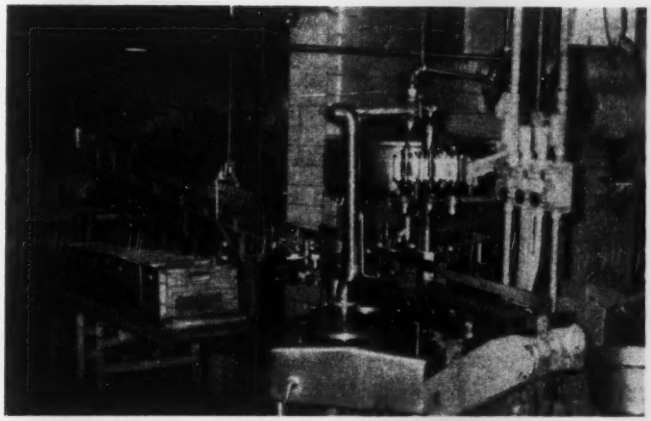
health begins at home

Charles C. Spencer
Erie County Health Department
Buffalo, N. Y.

ENGINEERS in local health departments —at city and county level—have jobs to do at that level, which, if done thoroughly, are the foundation for public health of the nation. Community sanitation is the engineering counterpart of preventive medicine.

It's the local man, knowing the local problem, who best can focus attention on needs and stimulate interest in projects to cure local sanitary ills. It is the clear-cut duty of the engineer in local public health work to participate in educational and promotional programs leading to improvement of municipal environment.

Advance planning can't be overemphasized. Many severe problems develop through lack of it in the face of rapid suburban growth.



TO MAKE MILK SAFE engineers and sanitarians have exercised control over pasteurization and milk handling processes.

PORT TERMINAL WORK at Wilmington, N. C., is typical of the high-type design applied to current port developments. Here, an all-concrete wharf, a warehouse and extensive rail facilities will serve shipping on the Cape Fear River. (Cape Fear Studio.)

The cover

At the port of Charleston, a crane cab manufactured in the Middle West is loaded on a ship that will take it to Thailand. It is handled by a 120-ton stiffleg derrick, said to be the largest commercial cargo crane south of New York.

South's Atlantic ports build for new business

Region's industrial expansion prompts aggressive new port authorities to spark growth in waterfront construction

Robert H. Dodds
Associate Editor

THREE MAJOR waterfront construction jobs on the lower Atlantic Coast point up an expanding source of construction business in the coming years.

At first glance, this optimism might seem unwarranted. Ocean cargo tonnage figures for the dozen-odd ports below Cape Hatteras show only modest gains in the past decade—in the order of 50%. And at most ports, these gains took place comfortably within the margin provided by existing facilities. South Atlantic ports, taken as a group, had been through a long era of decline.

Moreover, war-built Army installations acquired by local groups might have been expected to take care of additional growth that would be predicted by projection of curves of the past ten years.

But these factors point to a sharp upward swing of the curves:

1. Rise in industrial output in the Southeast and the Midwest has been much greater than South Atlantic port tonnage growth.

2. Favorable freight rate differentials encourage shipments through the Georgia and Carolina ports to and from points as far northwest as Omaha and Duluth.

3. Aggressive promotion of port business, by newly created public authorities, is beginning to get results.

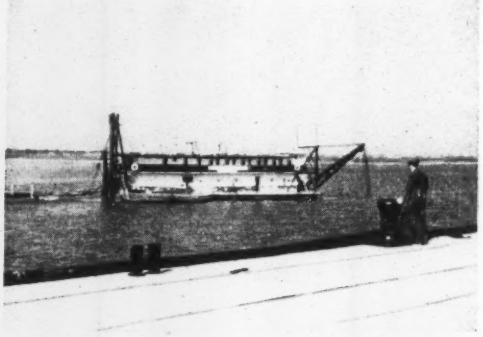
• Money to be had—Under the authority system, too, there's likely to be money for new construction.

The public bodies are bothered by neither taxation nor rate regulation. Tax advantages (relative to tax costs of private operators) can offset construction cost increases, and the authorities can set their own rates. They've also gotten a few bargains in surplus government facilities.

Shippers will prefer new, modern facilities (faster cargo handling, quicker turn-around for ships)—thus volume should weather recessions.

Investors seem to go along with this

WAREHOUSES are essential elements of new port construction. These are at Morehead City, N. C. (ENR photo.)



DREDGING must be done to provide berths and approaches. This dredge is seen from the wharf at Wilmington, N. C.

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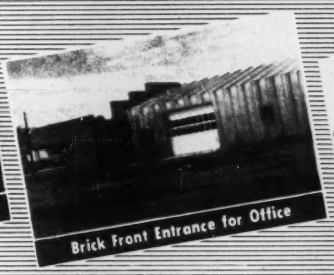
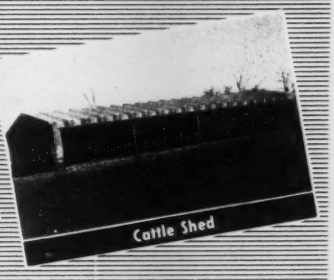

Brick Front Entrance for Office


Cattle Shed

Church-Gymnasium Building

Warehouse for Printer

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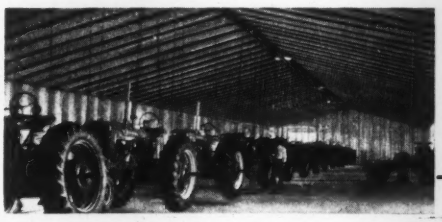
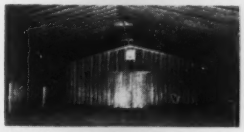
New principles in building construction have made this possible — new principles that give promise of revolutionizing utility building construction: (a) Monocoque Construction with deeply corrugated sheet steel or aluminum, and (b) reinforced by Roof Beam Action.

Whether a builder or an industrial operator in need of additional and immediate space, you will find it well worth your while to learn all about Behlen All-Metal Frameless buildings . . . how surprisingly quick and easy to erect, how very reasonable in cost, how completely adaptable to your particular need.

BELOW — Fourteen farm tractors, weighing a total of 32 tons, suspended from roof ridge with minimum deflection.



Complete material for a building, 40'x100'x14', loaded in a truck for shipment.


No truss members in roof. No support columns in interior. No curved walls or frame work.

Write or wire for information; or estimates on construction in which you may be interested.

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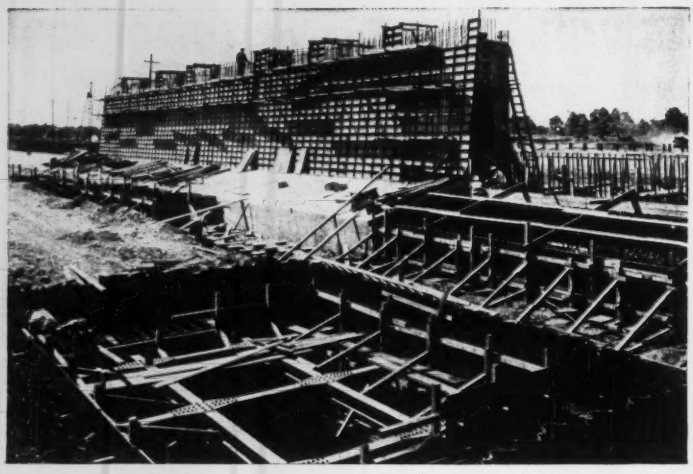
COLUMBUS, NEBRASKA



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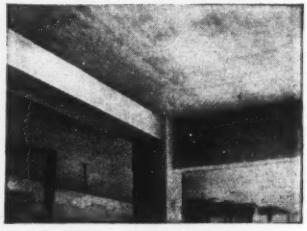
IN CHICAGO —The Algonquin Apartments used a set of GPX forms in each of six fourteen-story buildings. After fourteen pourings of beams, floors and roof slabs, 43,000 square feet of GPX was still serviceable.

IN TEXAS —The Lipton Tea Building in Galveston is an outstanding example of modern monolithic construction. Walls, floors and ceilings are all smooth, lustrous concrete . . . poured in GPX forms.



IN NEW YORK —This Flushing housing project builder found GPX eliminated plastering or refinishing. Interior walls and ceilings were ready for painting shortly after stripping the GPX forms.

FOR ALL CONCRETE FORMING —GPX is not limited to monolithic construction. United States Steel used GPX forms for foundations for spread footings, blast furnaces, coke bins and gas holders at the new Fairless Works near Trenton, N. J.

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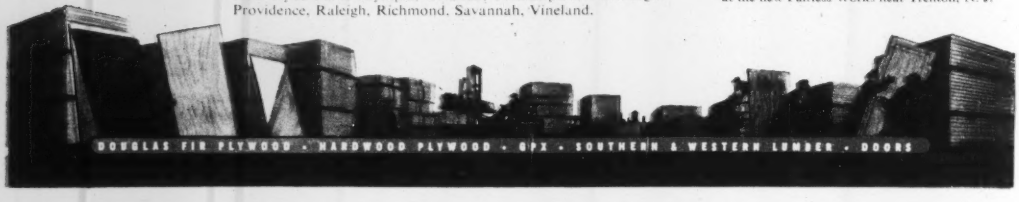


line of reasoning because revenue bonds have found ready markets.

• **Who's doing the work**—The three construction jobs now under way are in Georgia and North Carolina.

The Georgia Ports Authority is spending $5.5 million at a site on the Savannah River 5 miles above the city of Savannah. Two North Carolina harbors, Wilmington and Morehead City, are sites of $7.5 million worth of construction by the North Carolina State Ports Authority. In addition, the Army is building a $22.8 million ammunition terminal at Southport, downstream from Wilmington.

The South Carolina State Ports Authority operates primarily in Charleston. Activities, so far, have been confined to rehabilitation of piers and acquisition of surplus government facilities.

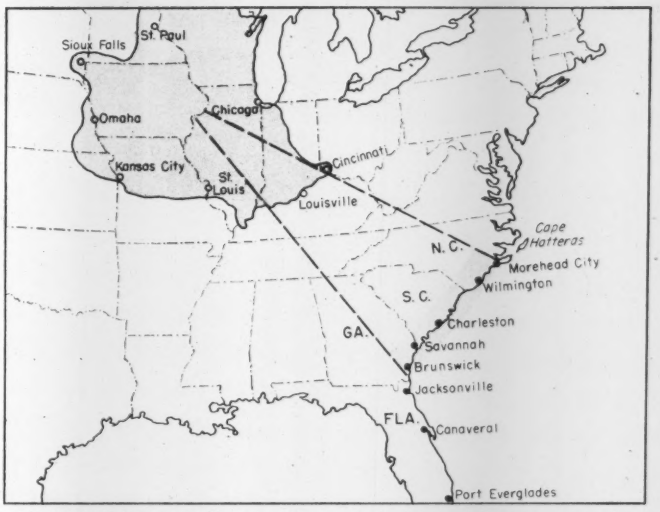
South of Savannah, the present pattern runs to county or city port management. Included are the ports at Brunswick, Ga., Jacksonville, Canaveral, Palm Beach, Port Everglades, and Miami, Fla.

North Carolina ports

Wilmington, on the Cape Fear River 30 miles from the ocean, is the historic port of entry for North Carolina. The State Ports Authority was established by the legislature in 1945 to develop modern port facilities at Wilmington, Morehead City and Southport. Because of the Army's interest in Southport, the Authority's attention has been confined to Wilmington and Morehead City.

First move after the authority was formed was to obtain a $90,000 federal loan for planning. Robert and Co., of Atlanta, worked on Wilmington plans. Carr and J. E. Greiner, Durham, N. C., and Baltimore, Md., handled the port design work for Morehead City.

Then in 1949 the legislature authorized state credit as backing for $7.5 million in revenue bonds to pay for construction. (The original act had not allowed the state's credit as a backstop.) Wilmington was to get $5 million. Morehead City's amount was $2.5 million.



FREIGHT RATES favor North Carolina, South Carolina, and Georgia ports for shipments from the shaded zones. Florida ports get their business from nearer points.

WHERE GROWING PORT BUSINESS IS COMING FROM

The South Atlantic seaports have an advantage in freight rates for shipments from some of the biggest, fastest growing industrial areas in the United States. Port redevelopment is based on the expectation that these areas will stay in the forefront of U. S. industrial expansion—and that shipments through the ports will benefit accordingly.

Manufacturing industry in most of the vast shipping market for the South Atlantic ports has grown faster than in the U. S. as a whole since 1939. The table shows growth in numbers of manufacturing production workers and value added by manufacturing—value of the product after materials, supplies, power and contract work are deducted—for the U. S. and the area served by the ports.

Manufacturing Growth—1939 to 1950

Percent Increase

	Value Added	Production Workers
Middle West (five states)	285%	60%
North Carolina	242	36
South Carolina	406	41
Georgia	338	60
Tennessee	268	40
Kentucky	415	87
United States	266%	51%

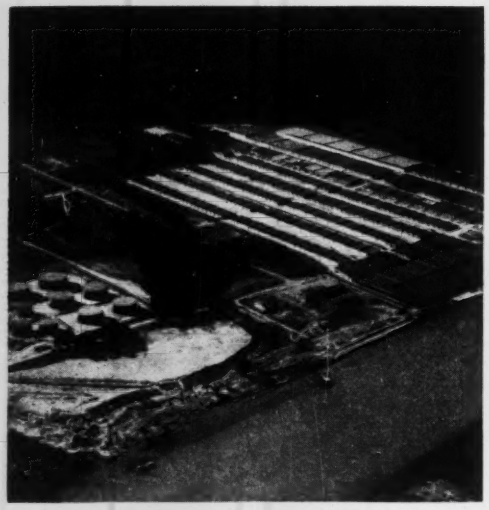
Together, these states produced 40 percent of total U. S. value added by manufacturing in 1950, and employed 39 percent of all U. S. manufacturing production workers. And industry in the area is still growing. These ten states got more than 36 percent of ENR industrial building contracts in 1950 and 1951.

• **Morehead City**—Authority-owned works at each port will be about the same size. Morehead City construction adjoins a two-berth wharf and piershed built in the '30's by the Morehead City Port Commission. The state authority took over the $400,000 facility in 1951 and commenced to build a two-berth 1200-ft wharf facing Bogue Sound. The transit shed, now almost complete, is 125x480 ft in plan. Next to it is a paved open storage area, and behind are two storage sheds 108x330 ft and 108x480. New trackage totals 8,000 ft. There is ample room for storehouse expansion. T. A. Loving & Co., Goldsboro, N. C., is the contractor.

• **Construction conditions**—Built on sand, the Morehead City wharf consists of a capped steel sheetpile bulkhead tied back to a wood-pile supported concrete anchorage beam. There is a timber relieving platform behind the bulkhead at El. +1.5. Dredged depth at wharfside is 32 ft, which is the local harbor depth.

The State Ports Authority is the only operator at Morehead City.

One railroad, the Atlantic & Eastern Carolina, serves the port. Principal port activity so far has involved handling Marine Corps transport and supply ships in connection with two nearby installations, Camp Lejeune



SURPLUS WAR TERMINALS have given head starts to two port authorities. At Savannah (left) five miles up-river from the city, authority got 2,000,000-sq ft Quartermaster Depot, but is building a new wharf. At Charleston (right) depot has 1,000,000 sq ft under cover, plus a three-berth wharf. (Photos by Andrew Bunn—l.; Louis Schwartz—r.)

and Cherry Point Marine Corps Air Station.

Transportation between the two Marine bases and Morehead City soon is to be improved by the construction of a 27½-mile railroad from Camp Lejeune to Cherry Point (where it will tie in with the Atlantic and Eastern Carolina). The Navy Department is building the new line.

• **Wilmington**—Construction at the older port will add three modern berths to ten already in use. The latter are owned by two railroads (Seaboard Air Line and Atlantic Coast Lines) and by private wharfage concerns.

The site, part of a World War II Maritime Commission shipyard, is leased from the commission for $1 a year. The 1,500-ft wharf has a 450-ft railroad trestle at one end, connecting two wharf-apron tracks with land trackage.

Almost 20,000 ft of track have been built, providing storage for 281 cars and access to a 98,000-sq ft warehouse now under construction inshore. Transit sheds, each of them 162x450 ft, will stand 106 ft apart on the wharf deck. Concrete end and fire walls were complete in February, but roof steel was delayed. Enclosure will be complete this summer.

• **Construction conditions**—Earth at the site is low-bearing silt over lenses of marl at varying depths. All structures are pile-supported. The wharf is on 2,800 octagonal piles that were precast at the site. Lengths vary from 50 to 60 ft. Diamond Construction Co. of Washington, D. C., drove them and J. W. Hunter Construction Co. of Wilmington is building the superstructure. J. A. Jones, Charlotte, N. C., is the warehouse contractor and Atlantic Construction Co. is doing the railroad work.

An important part of work for most of the lower Atlantic ports is channel and wharfside dredging. The U. S. Engineers now have a project depth of 32 ft in the Cape Fear River channel. The authority has completed a 363,000-cu yd contract with Atkinson Dredging Co., Norfolk.

• **Traffic promotion**—Under the direction of Col. George W. Gillette, executive director, the authority is going out after new port business. Included in the program is a plan to open traffic offices in Washington, D. C., New York and Chicago. These offices will supplement direct-mail activities, answering inquiries from shippers and selling those shippers on the two ports' freight-rate advantages, as well as their new facilities.

In 1950 Wilmington handled about 4,000,000 tons of cargo, but 80% of it was petroleum. General cargo business has fallen in most years since 1900. A particular goal of the authority is to restore tobacco export business. North Carolina, one of the nation's most important tobacco-producing states, has been exporting tobacco through the ports of Norfolk and Charleston.

• **Ordnance port**—The biggest port construction job in North Carolina—Southport Army Depot—still is in the design stage. To cost $22.8 million, it will be placed under construction soon for 20-month completion. It will include three covered wharves 1,800 ft long, 22 buildings, a 22-mile railroad and 9 miles of dredging.

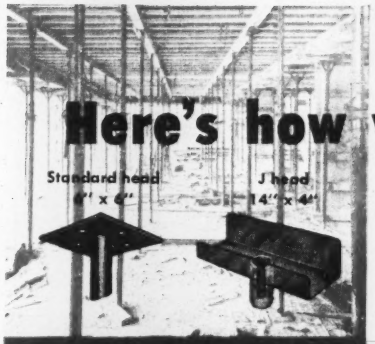
South Carolina ports

The story of Charleston port work is just about the whole story of the South Carolina State Ports Authority. The harbor of Beaufort, which a century ago boasted the lower Atlantic Coast's only naval dry dock, long has been inactive as far as ocean shipping is concerned. Congress has authorized a 27-ft channel to Beaufort, but no money has been appropriated. Georgetown has had a 27-ft channel for two years. It recorded 1,000,000 tons of cargo, mostly pulp and paper, in 1950.

Construction activity by the state authority at Charleston amounted to about $380,000 last year—mostly improvements made at four state-owned terminals and modernization of a 13-mile switching railroad. Private operators spent about $4 million.

With 55 piers, wharves and docks on its extensive waterfront, Charleston would appear to be the least likely place along the lower Atlantic Coast for all-new waterfront construction work. There's plenty of slack to be taken up, so maintenance and modernization work should be the rule.

However, the Back River industrial



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3	8 ft. 2½ in.	12 ft. 5½ in.	56	10.15 tons	7.55 tons	7490 lbs.	5600 lbs.
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Southern seaports expand . . .

water project (ENR May 1, p. 66) could change waterfront construction business prospects substantially. Cheap, abundant water is expected to spur a tremendous industrial development in an area on the Cooper River 15 miles above Charleston. This stretch of river can be made navigable for large ships.

Increasing importance of the state authority is demonstrated by the fact that the tonnage handled over its wharves increased from 44,000 in 1947 to 511,000 in 1951. Charleston's overall tonnage was 3.4 million in 1950.

• **Traffic promotion** – Cotesworth P. Means, chairman of the authority, attributes much of this growth to the activity of its traffic offices in Rock Hill, S. C., Chicago, New York, and Washington, D. C.

The bureaus have been especially successful in attracting midwestern machinery shipments.

An extensive array of lifting equipment has helped get the business. One item, a 120-ton stiffleg derrick, is said to be the largest commercial waterside crane south of New York. Three railroads serve the port.

In Charleston proper, the authority operates two facilities: Columbus St. Terminal (soon to be expanded to 3-berth capacity by the construction of two dolphins and a 115-ft catwalk) and Union Piers No. 1 and No. 2 (two berths). Last year a $2,000,000 former ordnance wharf 1,000 ft long was acquired from the Army. For bulk material, it is up the Cooper River about ten miles from the city.

Just downstream from the newly-acquired wharf is North Charleston Terminals, which has a 1,938-ft marginal wharf 40 ft wide and 1,000,000 sq ft of storage space. (Total public space for storing cargo in Charleston is 2,500,000 sq ft.) This facility, valued at $20,000,000, was a World War II Army supply depot.

The authority has no bonded debt, although it has the power to issue revenue bonds.

Georgia ports

A plum somewhat similar to the North Charleston Terminal gave the Georgia Ports Authority its big push. A $12,000,000 Army Quartermaster Depot with 2,000,000 sq ft of warehouse space was offered to the state in 1948 for $808,100. This was the chance the Georgia Ports Authority had been waiting for since its formation in 1945. Governor Talmadge accepted the bargain and turned it over to the authority. In 1949 the authority hired Henry W. Sweet as its executive director. Mr. Sweet came from Mobile, where in four years he had led that port through a substantial expansion program.

Although bigger than the North Charleston Terminal in terms of covered space, the Savannah depot did not have ship accommodations to amount to anything.

Mr. Sweet set about correcting this. The first step was to hire Robert & Co. to plan additional works that would combine with the warehouses to make a full-fledged port terminal.

The next step was to finance the work. This was done with a $5,500,000 issue of revenue bonds at 3½%. This was a good deal for private investors because the authority already had a general warehousing business in operation. At present, space rentals alone bring in $350,000 a year. Operational costs are covered by commodity handling fees.

The location was excellent in many respects. Five railroads served it, and a 42-in. main for the Savannah Industrial Water System crossed the property. One drawback, an inadequate railroad lift bridge downstream, now is being rebuilt to permit large cargo ships to pass. And Congress has authorized channel deepening from 30 ft to 34 ft; widening from 200 ft to 400 ft. The terminal is 17 miles from the ocean.

In addition to warehouses, the quartermaster depot had 8 miles of railroad trackage, adjoining extensive railroad-company yards.

New construction includes five more miles of tracks, a 2,047-ft marginal wharf with a 46-ft apron carrying two tracks, and three transit sheds (217,000 sq ft covered space). There also are foundations for a 125-ton stiffleg derrick similar to the one in Charleston. A bulk fuel terminal is being completed for a lessee.

The present project will be complete next fall. (Mr. Sweet, who is president of the American Association of Port Authorities, will be host to its annual meeting in November.)

Contractors on the project are all from Savannah. They include: Espy Paving and Construction Co. (marginal wharf); Buck-Worrell Const. Co. (transit sheds); Dixie Construction Co. and Robert Lee, Inc. (site development and utilities).

This work is by no means the limit of construction business at the terminal. There is waterfront space for another 2,000 ft of wharfage.

• **Construction conditions** – Foundation conditions consist of silt over cemented sand at about El. −15. The wharf substructure is partly like the one at Wilmington: site-precast concrete piles set in spudded and jetted holes. They vary from 38 to 60 ft in length and number 1,971. There are fewer piles than at Wilmington because pile-supported deck extends only partly under the transit shed. The rest of the deck support is fill behind a tied-back sheetpile bulkhead.

• **Traffic promotion** – Whether there is more construction business depends on growth in the authority's business. This seems inevitable because, like its neighbors to the north, the authority is making the most of its advantages. It has a traffic office in New York and soon will open one in Chicago. (There also is an administrative office in Atlanta.)

Need for this aggressiveness was noted in a 1945 Savannah industrial survey by Frederic R. Harris, Inc., of New York. The report noted declining port business and recommended that an effective business-promotion organization be established. The authority appears to be the answer.

Modern docking facilities also were a requirement for improving Savannah's industrial potential. Bigger ships call for longer berths; improved cargo handling equipment reduces stevedoring costs.

Many of the port's 47 berthing spaces are obsolete, so if port volume is to increase significantly beyond its present 4 million tons a year, private operators might be expected to modernize, creating still more business for contractors.

• **Brunswick Port Authority** – Georgia's other port, Brunswick, now is being reactivated by the Brunswick Port Authority. This municipal agency was established by the legislature in 1945, at the same time as the state authority was, but only recently did it become active. Located at the former J. A. Jones Shipyard (acquired from the War Assets Administration) the authority has been operated under Port Director W. H. Bedford since last fall. Mr. Bedford formerly was a port consultant with the Defense Transport Administration.

Now being rehabilitated are existing piers, transit sheds and warehouses. These will furnish three berthing spaces and about 200,000 sq ft of covered space.

Two railroads serve the port. Rates from the Midwest are comparable with those of the ports to the north, so Mr. Bedford is starting a promotional program to get a share of the business.

If this program is successful, Bruns-

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. . . produced at low cost

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By reproducing its engineering drawings on Kodagraph Autopositive Paper, the Hyster Company gets intermediates which have dense black photographic lines on a translucent, highly durable paper base. *Intermediates* which will remain intact in the files year after year . . . and produce sharp, legible blueprints and direct-process prints whenever needed.

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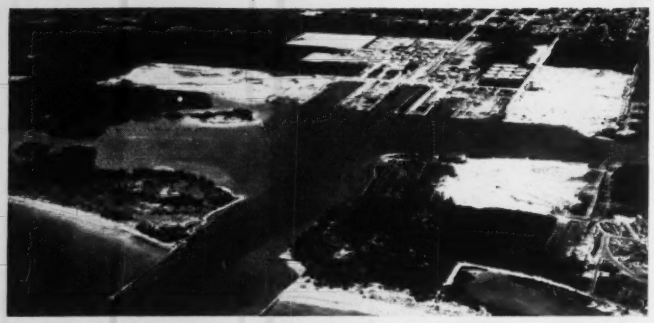

BUSY FLORIDA PORT is Port Everglades, where Broward County Port Authority is steadily expanding its facilities. Part of freight business used to go to declining port of Miami. Petroleum products are principal commodities.

wick may be called upon to handle a much larger volume than would be indicated by its 650,000-ton-per-year average in the decade before World War II. The harbor has many miles of undeveloped deep water frontage and it has the advantage of being close to the ocean. Big cargo volume increases undoubtedly would create a demand for waterfront construction work.

Florida ports

South of Brunswick, long-distance freight becomes less significant to overall port business. Jacksonville, for instance, deals mostly with central and northern Florida and southern Georgia, although freight rates favor some shipments to and from a slice of territory extending into Tennessee and the Midwest north of Alabama.

But plenty of business is generated in Florida itself. New-construction talk can be heard at the majority of ports, and one all-new port is under construction.

• **Jacksonville** — Jacksonville trade, which grew from 3 million tons in 1947 to almost 5 million in 1951 will be helped by a 4-mile channel-straightening project the Army Engineers finished at the end of 1951.

The new 34-ft channel shortens the 20-mile St. John's River ocean-to-Jacksonville distance by two miles.

Dames Point, an unused area adjacent to the new channel, now is being boosted as a potential port terminal area. The Seaboard Air Line Railroad has made preliminary engineering studies of the site. Local interests want private capital to develop the area. Failing this, a Duval County Port Authority may be formed.

At any rate, there is heavy pressure for construction of more facilities. In January alone, one operator had to turn down 23,000 tons of cargo because he didn't have enough warehouse space.

Recent construction is a drop in the bucket compared to the overall need. Last year the city-owned Municipal Docks and Terminals rehabilitated and reopened a berth and an adjacent warehouse for cargo transit. There is no more room for expansion. The Atlantic Coast Line also brought a berth and a warehouse back into service. A private operator built a 32,000-sq ft wharf house and is ready to go ahead with a much larger one if he can increase his rates enough to cover the cost. A project about to begin is a cement storage and bagging plant, which will handle cement barged from a new mill at Bunnell.

• **New harbor**—Just below Cape Canaveral, 150 miles below Jacksonville, a new inlet has been cut through the coastal island, to provide access to a diked-in harbor area on broad Banana River. The cutting operation was described in ENR Nov. 22, 1951, p 36.

Canaveral is not yet an operating harbor, though wharfage space has been leased to five fishing companies. An independent oil firm has leased one berth and obtained pipeline easements to a tank farm area outside the harbor property. Construction has begun on a permanent 400 foot long tanker wharf for the harbor.

No arrangements have been made yet for handling general cargo through the port. The nearest railhead is at Cocoa, 10 miles from the harbor area. Plans are to link the harbor with the Intracoastal Waterway by a lock canal at some future date, but the harbor is now enclosed.

Canaveral Port Authority was financed by a $1,365,000 bond issue secured by the taxing power of the authority over much of Brevard County. Debt service and operating expenses and current income is about $4,000.

Farther down the coast, the two up-and-coming harbors for ocean traffic are those of Palm Beach and Port Everglades.

Palm Beach recorded a modest 700,000 tons of traffic in 1951. Two slips and one marginal wharf provide berthing of two cargo vessels and two freight-car ferries. Plans are under way to provide a third ship berth. A proposed revenue bond sale will pay for this work. Definite plans for 1952 include a new 60x500-ft warehouse.

Port Everglades harbor, at Fort Lauderdale, is South Florida's most promising source of construction business. Owned by the Broward County Port Authority, it rates as one of the major ports on the lower Atlantic Coast. The principal commodity is petroleum products. Last year's tonnage was 3.6 million tons.

Now the port has berthing space for eight ships of 400 ft or longer. Trackage inside the port has a capacity of 920 cars. A new 700-ft bulkhead, to be built this year, will add a berth. A warehouse for Puerto Rican cement imports now is under construction. And there is talk of a $200,000 warehouse to be built soon by a private operator. This is only a start.

Encouraged by steadily increasing business, the port authority last year bought 38 acres of hard ground, adjacent to the terminal, and took an option on 156 acres of tideland, which can be filled. Recently a chemical company leased 40 acres of authority land for a $5,000,000 plant.

• **Miami lags**—The only lower Atlantic port that isn't booming, or at least trying to boom, is the Port of Miami. Cargo volume in 1951 was 372,000 tons. This at a port that has eleven berthing spaces for ocean ships.

Port Director A. J. Olson complains of a "progressive deterioration" in port facilities, but city officials are doing nothing to correct it. (Last year an engineering firm estimated that $2,100,000 worth of work would be required to bring all facilities up to scratch.)

In fact, there has been talk in recent years of abandoning the present port and creating a new deep-water port on Virginia Key, an island on Biscayne Bay south of Miami Beach. The talks have come to nothing, and local sources say a consolidation with Port Everglades is more likely.

An ironic twist to Miami's anachronistic plight lies in the fact that, by 1947 Florida legislative action, there is a Dade County Port Authority. This authority, which does a fine job with airports, has been balked in its efforts to wrest seaport control from the City of Miami.

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Build with Wheeling Tri-Rib Steel Roof Deck!

A perfect example of how to *save* steel by *using* steel *wisely* — that's Wheeling Tri-Rib Steel Roof Deck! It reduces dead load 8 to 22 lbs. per square foot, hence lighter structural supports may be used. Sub-purlins are eliminated. Steel is saved.

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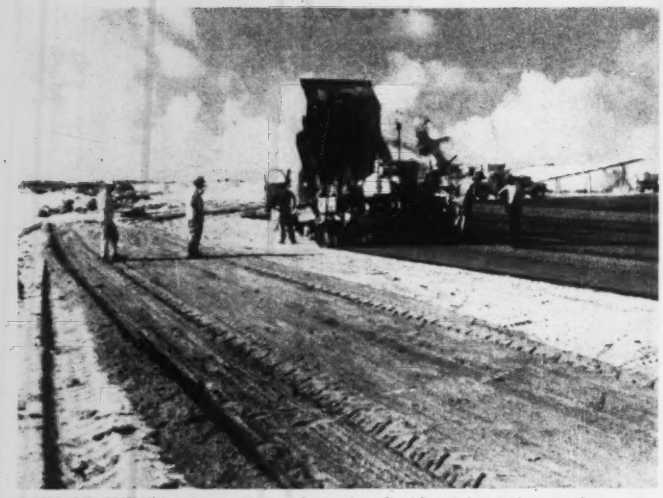


RAIN OR SHINE paving at Eniwetok continued with minimum interruption.

Paving on A-bomb island done with asphalt emulsion

DURING a momentary pull back of the curtain of secrecy that hides the kind and extent of construction at the atom bomb testing station on Eniwetok Island in the Pacific, it has been revealed that all of the paving work there has been done with emulsified asphalt. Involved were runways, parking aprons, roads and general utility areas. Since the material could be supplied by tanker and laid in rainy weather, considerable economy over other possible types of paving is said to have resulted.

The work was handled by the engineer-construction firm of Holmes & Narver of Los Angeles, which began by setting up a special board of engineers to study the paving problem. A test installation on Eniwetok aided in the decision to use emulsified asphalt, after which the paving was done rapidly and efficiently despite a scarcity of trained asphalt workmen on the job.

Holmes & Narver received substantial help from the technical employees of the materials supplier, the American Bitumuls & Asphalt Co., which contributed to the success of the construction work.

• **Bulk hauling is cheap**—A significant contribution to the economy of the job is attributed to inexpensive bulk handling of the asphalt emulsion. Also a type was selected that would set up under severe weather conditions and that would not suffer from salt water contamination—necessary at Eniwetok since salty water would have to be used in the mix.

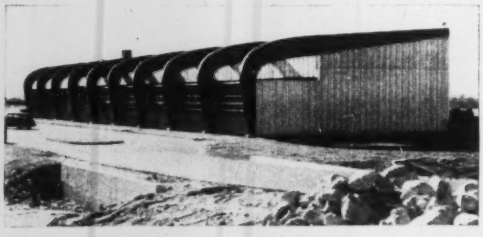
Arriving by tanker the material was transferred to a barge in the Eniwetok Lagoon, which was then hauled to within 1,200 ft of the point of use. From there the material was pumped to receiving tanks through submerged "invasion" type piping.

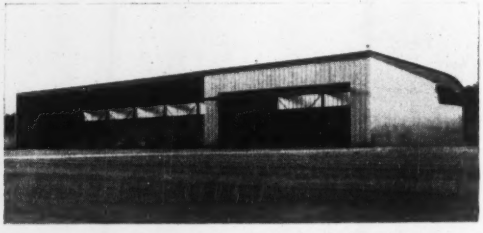
• **Rain is a factor**—One of the main advantages of the asphalt emulsion mix is that heavy tropical rains have no adverse effect on it. At Eniwetok five or six heavy showers per day of ½ in. or more each is not an uncommon occurrence.

Although uniform water content in mixes is desirable for best construction efficiency, a variation is not unduly harmful. A dense tightly-sealed sandpaper-like finish results from properly wet mixes; a "rocky" surface when too dry. Rain during placing would wash only the topmost sand grains and in so doing change the color of the surface to white. Color uniformity was readily obtained with a very dilute final application of emulsified asphalt.

• **Coral aggregate**—The paving mix was made with coral aggregate combining crushed ledge coral with beach sand and crusher dust. Mixing was accomplished in a continuous pugmill plant. A well-graded, stable mix resulted with maximum rock size being 1 in. and with 70% passing a No. 4 sieve. Emulsified asphalt content was 8.4% by weight.

Following the preparation of the subgrade by blading and rolling, the asphalt material was laid down by a paver.





Exposed cantilevered framing of this nose hangar, at an airport near Providence, R. I. gives the building a striking appearance. Frames are bolted down to a buried continuous anchor beam 5 x 5 ft in cross-section. Frames cantilever 42 ft out from 22-ft high columns at inner side of lean-to. Placed at 25-ft intervals, the frames have a maximum depth of 4½ ft. Overall dimensions are 62 x 225 ft, but length can be altered by removing light end walls and adding frames and enclosure. In its present size the open part can cover the front end of a DC-4. The closed part, which has radiant heating pipes in the floor, accommodates light planes. Its door height is 20 ft. The all-new airport, a $1.5 million class A port with a single 5,000 ft runway, was designed by Knappen-Tippetts-Abbett-McCarthy, of New York, for the Rhode Island Department of Public Works. M. A. Gammino Const. Co., of Providence was the contractor. This information was supplied by J. J. Rosa, KTAM's resident engineer.

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6-YARD

150-B

Brings NEW SPEED, POWER, CAPACITY To Heavy Duty Excavating

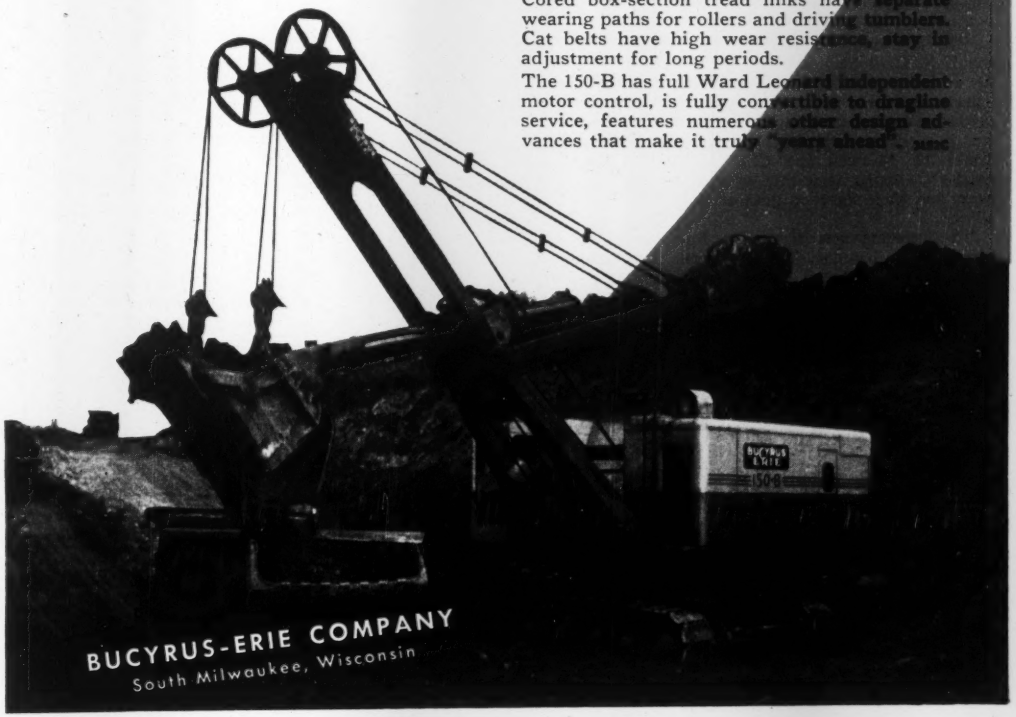
ADDED to the time-proved superiorities of design and construction which have made Bucyrus-Erie quarry and mining shovels traditionally "years ahead" are important features new to an excavator of this size, yet *thoroughly proved in the field*. Among these 150-B features are:

Exclusive Two-Section Boom with tubular dipper handle free to rotate in saddle block. Used with outstanding success on Bucyrus-Erie's large stripping shovels for many years, this design speeds the working cycle and permits increasing the payload because it reduces front end weight materially — yet provides enormous strength. Upper boom section carries only load resulting from pull of ropes, swing; trussed lower section transmits directly to the revolving frame the vibrations, torsional and shock loads set up in digging. Rope crowd is quiet, positive, with crowd machinery located on the deck.

Powerful New Main Machinery designed for double twin hoist, smoothly delivers power where you want it, when you want it. Hoist machinery pulls dipper straight through tough banks with steady positive action. Fast smooth swing, with quick acceleration and deceleration, shaves seconds off every cycle.

Larger Stronger Mounting has new propelling machinery arrangement, which provides rapid engagement of the propel for fast move ups. Cored box-section tread links have separate wearing paths for rollers and driving tumblers. Cat belts have high wear resistance, stay in adjustment for long periods.

The 150-B has full Ward Leonard independent motor control, is fully convertible to dragline service, features numerous other design advances that make it truly "years ahead".



BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

ATTACKING RECRUITING PROBLEMS: (left to right) Leslie N. McClellan, chief engineer, Bureau of Reclamation, Denver; James D. Forrester, chairman, Department of Mining Engineering, Missouri School of Mines and Metallurgy; Ross Pollock, chief, Examining Program and Standards Branch of the commission; J. M. Mitchell, civil-service commissioner; E. J. Stocking, Washington Recruiting Branch; J. H. Ehlers, ASCE; Blake Van Leer, president, Georgia Institute of Technology.

Engineer recruiting plans mapped

Engineers last week (May 8 and 9) for the first time met officially with the U. S. Civil Service Commission. An advisory committee on engineers—made up of six outstanding leaders in the profession—sat around the table for two days with Commissioner James M. Mitchell and CSC staff heads to discuss recruiting of engineers and their status in government service.

The meeting was significant for more reasons than one. The engineers Advisory Committee is the first professional group to be called into consultation by CSC. Appointed by the commission chairman, the advisory committee is designed to represent the entire engineering profession. The committee was fostered by Engineers Joint Council, but it does not represent the enginering societies as such.

A committee of this kind has been talked about since 1939—probably longer. In the late 30's, President Roosevelt's Commission on Civil Service—with Gano Dunn representing the engineers—suggested something of the sort. But the idea was sidetracked at the time. EJC actually put the plan across and brought the committee into being.

Members of the six-man committee are: Joseph H. Ehlers (named chairman), Washington representative, ASCE; Blake R. Van Leer (vice chairman), president, Georgia Institute of Technology; James D. Forrester, chairman, Department of Mining Engineering, Missouri School of Mines and Metallurgy; Edwin O. Griffenhagen of Griffenhagen and Associates, management engineers, Chicago; Leslie N. McClellan, chief engineer, Bureau of Reclamation, Denver; and Ezra B. Whitman of Whitman, Requardt and Associates, consulting engineers, Baltimore, past president of the ASCE.

As presently constituted, the committee is purely advisory. CSC calls upon the group to advise on top policy matters affecting engineers in government service. Some controversial problems were thoroughly aired at the first meeting and were taken under advisement by the committee for continuing study.

Navy engineer wins award for novel concrete design

A. Amirikian, chief engineer of the Bureau of Yards and Docks, won the Concrete Reinforcing Steel Institute Award for 1952 for his work in thin-shell precast concrete.

The award consists of a certificate and $500 cash. It was presented during the 28th Annual Meeting of the institute, held the week of April 28 at White Sulphur Springs, W. Va.

This was the first time since 1949, when it was initiated, that the award was made. At that time, it was given to Ammann & Whitney, also for work in thin-shell construction (ENR Aug. 11, 1949, p. 21).

Amirikian has designed many structures of thin-shell precast concrete for the Navy. One example is the warehouse at Mechanicsburg, Pa., with structural framing of hollow precast rigid frames (ENR April 18, 1946, vol. p. 546). More recently, he designed precast houses and is now making studies of precast bomb shelters.

A. AMIRIKIAN receives award.

(*Men & Jobs continued on page 76*)

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The new Barber-Greene Model 543 is the last word in loading economy. Backed by over a billion cubic yards handled by its predecessors, this machine is ready to cut your loading costs.

The new hydraulically controlled trimmer-conveyor combines with time-proved B-G advantages — such as the Spiral Feed, Cleanup Scraper, automatic Overload Release and Floating Boom — to save appreciable manpower on every job. With its 15 m.p.h. road speed, the 543 can get to the job fast and move from pile to pile in a hurry. It is built for high production through years of low-cost service. In addition, it is convertible to a Snow Loader for year-round usefulness.

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The new hydraulically controlled trimmer-conveyor allows the operator of the 543 to distribute a maximum load into highest trucks, long trailers and railroad cars—with effortless finger-tip control. With the continuous flow principle, plus the hydraulic trimmer, the B-G 543 offers the absolute minimum investment per cubic yard of material loaded.

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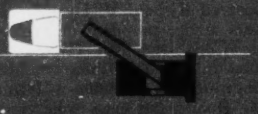
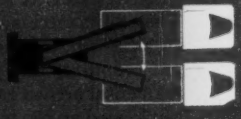


Fast shoulder cleanup.

For shoulder cleanup or windrow pickup, the 543 Loader can load "over the cab" with trucks traveling in the same direction as the loader. It can load over the rear or side of trucks as conditions require. Dual spotting, with one truck backing in while the other is being loaded, is made possible with the trimmer-conveyor. The Barber-Greene Spiral Feed assures a clean pickup, enables the 543 to perform other duties, including shallow excavation, blade layout stripping, etc.



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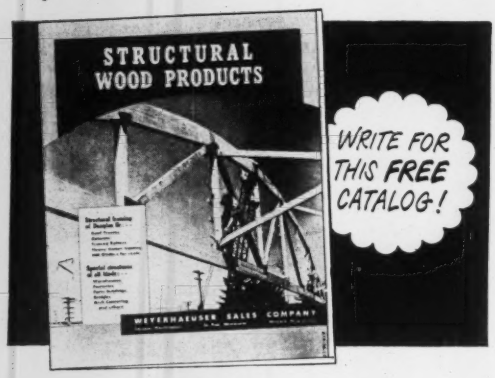

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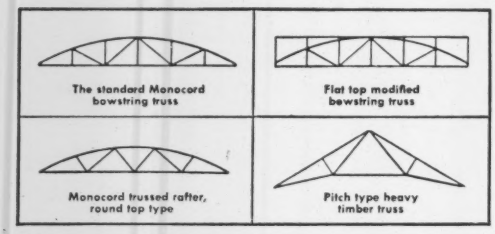
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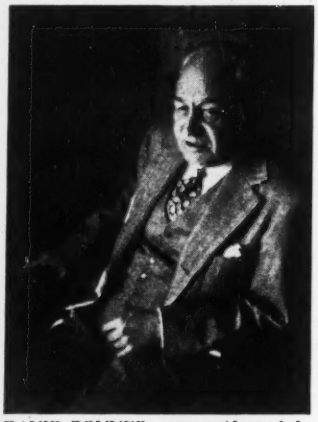


DAVID BONNER, new president of the Moles, discusses the Chesapeake Bay Bridge foundations in the New York office of Frederick Snare Corp.

Top post in The Moles goes to engineer

The Moles, New York association of tunnel and heavy construction men, have elected David Bonner president to succeed Richard V. Hyland. Mr. Bonner is vice president of Frederick Snare Corp. and Mr. Hyland is a partner in the New York consulting engineering firm of Madigan-Hyland.

Mr. Bonner has been in heavy construction since graduating as a civil engineer from Princeton in 1909—successively with Henry Steers Construction Co., Barker-Bonner, Inc., again with Steers, then Raymond Concrete Co., Rodgers and Hagerty and Metropolitan Sand and Gravel Co. He went with Snare in 1942 and is now a vice president of that firm.

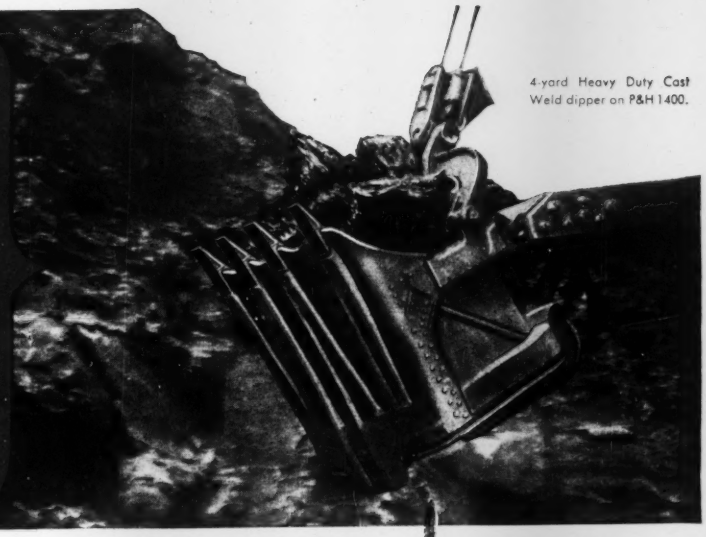
The most recent large job that Mr. Bonner handled was a portion of the foundations for the Chesapeake Bay Bridge. He says this was one of the most difficult bridge jobs yet because of the hazards of big, open water. There is a 40-mile sweep from the north and an 80-mile sweep from the south.

Elected first vice president of the Moles was Richard E. Dougherty, former president of the American Society of Civil Engineers. George F. Ferris, vice president of Raymond Concrete Pile Co., is second vice president. Other new officers include Harry T. Immerman, Spencer, White and Prentis, secretary; Howard P. Maxton, Raymond Concrete Pile Co., treasurer and Charles E. Simmons, Bethlehem Steel Co., sergeant-at-arms.

(*Men & Jobs continued on page 78*)

A New Heavy-weight

tough enough to lick your meanest digging jobs



4-yard Heavy Duty Cast Weld dipper on P&H 1400.

With a surplus of fight where it counts most, *ESCO* Heavy Duty Cast Weld dippers stand up on equipment-killing jobs where only the best is tough enough. Here's the inside story of this rugged new Heavyweight:

- **Back connections to fit any make of machine.**
- **Cast manganese steel digging and wearing parts same as on All-Cast dippers.**
- **Shell and back beams fabricated of heavy plate steel.**
- **Manganese or alloy steel bushings on pin connections.**
- **Size ⅜ to 6 yards.**

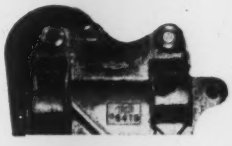
Maintenance, when at last it becomes necessary, is quickly done on the job with ordinary methods and electrodes.

For details of weights and dimensions, see your *ESCO* dealer, or send us the filled-in coupon for bulletin 189, "*ESCO* Dipper Buckets".

Manganese steel doors and hinges stand up under shock and heavy loads. Free working latch mechanism.

Wide set teeth and tapered box promote fast digging and quick, complete discharge.

Massive rock-type front casting of manganese steel resists shock and wear of digging. Tooth holders cast integrally with cutting lip.



Hollow beam construction increases strength, reduces weight. Heavy duty back connections and ribs.

ESCO Dippers, Hoe Dippers, Dragline and Coal Loading Buckets

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MEN AND JOBS

• **Appointed**—Assigned to head the newly established San Francisco field office of Engineer Inspector General is **Col. Henry G. Douglas,** who, working directly under the Chief of Engineers' office, Washington, D. C., will be responsible for inspections and investigations in North and South Pacific Divisions of the Corps of Engineers . . . **Leonard L. Youell** has been named vice president of Stone & Webster Canada Ltd., in Toronto . . . **Edward J. Morgan** will succeed **Frederick Ohrt,** retired, as engineering chief of Honolulu's Board of Water Supply . . . New head of the U. S. Bureau of Mine's Stream Pollution Research Section, Northeastern Region is **B. P. Martinez,** who will headquarter in College Park, Md. . . . **Robert Welty,** consulting engineer in The Dalles, Ore., has announced formation of a corporation to be known as Robert Welty & Associates . . . **John O. Eichler,** professor of civil engineering at New York's Cooper Union School of Engineering, will head the newly formed Metropolitan New York section of the American Society of Photogrammetry.

In Oakland, Calif., **Samuel C. Jacka,** assistant city engineer and chief of the engineering division, was named director of the city's public works, succeeding **Richard Gallager,** who resigned to accept a similar post in San Diego.

Lieut. Col. John B. Beckham, recently assigned executive assistant to Col. C. C. Haug, Sacramento District, Corps of Engineers, has taken charge of the district's $100-million military construction program.

• **Elected**—New president of the Steel Joist Institute is **A. Carl Weber,** director of research and engineering sales, Laclede Steel Co. Professor **J. W. Hubler,** chairman, Department of Civil Engineering, Washington University, was re-appointed as the Institute's consulting engineer . . . Members of the Construction Men's Association re-elected **James H. Dillon** of New York City as president at their ninth annual meeting last week.

• **Honored**—**Charles R. Waters,** district engineer for the State Department of Public Works, will receive an honorary Doctor of Engineering degree from Union College, Schenectady, at commencement exercises June 8.

• **Resigned**—**R. A. Sharood** will leave his post as chief engineer for the Alaska Railroad this week to take over as chief engineer for the government-owned Saudi Arabia Railroad.

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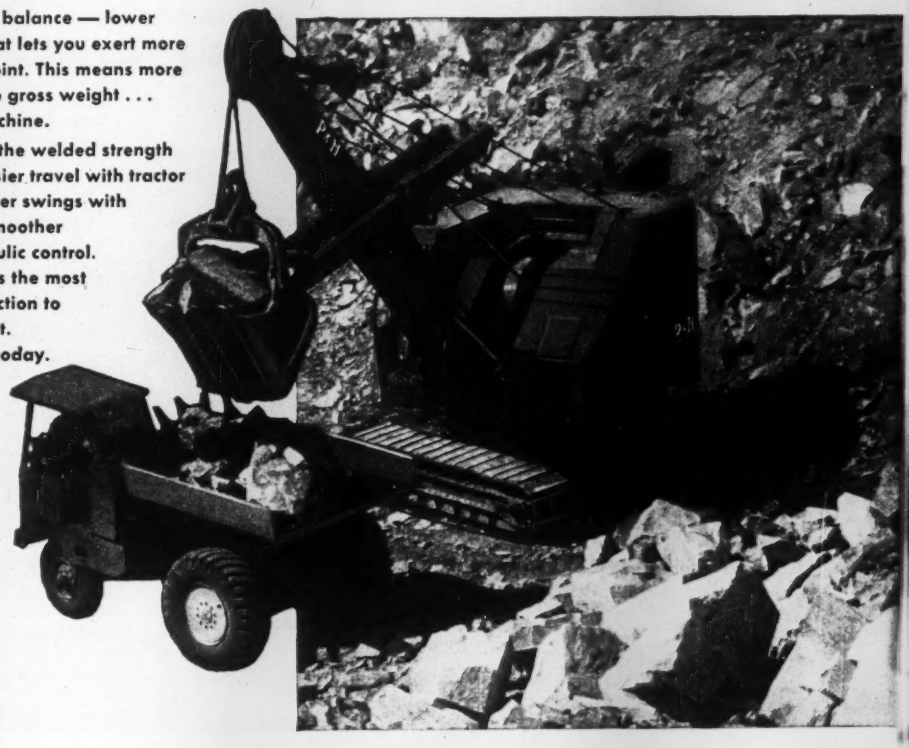
GIVES YOU MORE DIGGING POWER

It's a matter of better balance — lower center of gravity—that lets you exert more power at the tooth point. This means more capacity in relation to gross weight . . . a harder working machine.

What's more, there's the welded strength of alloy steels . . . easier travel with tractor type crawlers . . . faster swings with live roller circle . . . smoother operation with hydraulic control. Modern design makes the most of every machine function to dig more at lower cost. See your P&H dealer today.



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P&H Power Shovels and Truck Cranes are more easily converted for various types of service because hoist and digging drums are on one shaft. The need for auxiliary shafts and gearing is eliminated. Write for literature on the size you need. Sizes up to 8 cu. yds., gasoline, diesel or electric power.

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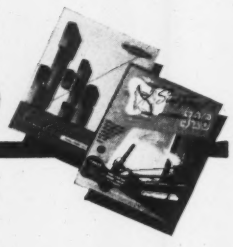
- J-16 provides a long lasting attractive satin-black, tough, easy to clean, wearing surface.

For complete details on Jennite J-16—Write for Specifications and these two brochures.



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RESEARCH

Test road report clears up hot issue

Considerable new light on the controversial issue of the effect of varying soil conditions on the results of the Maryland test road is cast by the "Summary of Major Findings" just issued by the Highway Research Board in Washington.

Since the final test runs were concluded in December, 1950, the value of the results has been challenged by trucking interests due to the fact that better soil was found under parts of the pavements subject to the lighter truck loadings than was found under pavements subject to heavier loads.

The new report gives a summary of the results of extensive soil sampling done following the test operations. They show that there was soil of similar character under large enough areas of each section of pavement to make the tests on each section of pavement comparable.

Much of the other information contained in this final report is covered by earlier reports issued during or immediately following the test runs, which were made between June 23 and Dec. 23, 1950 (ENR Nov. 2, 1949, p. 25; Nov. 9, 1950, p. 30; Jan. 18, 1951, p. 28).

The tests were conducted on 1.1 mi of Portland-cement concrete pavement on U. S. 301 near La Plata, Md. That pavement consisted of two 12-ft lanes having a 9x7x9 in cross-section which was laid in 1941. Loads employed were 18,000 lb and 22,400 lb on single axles, and 32,000 and 44,800 lb on tandem axles.

Each class of test-load truck operated in both directions over a single lane of pavement about one-half mile long, turning at each end in rotaries built for that purpose. The more lightly loaded trucks operated on two parallel lanes at the south end and the heavy trucks were at the north end.

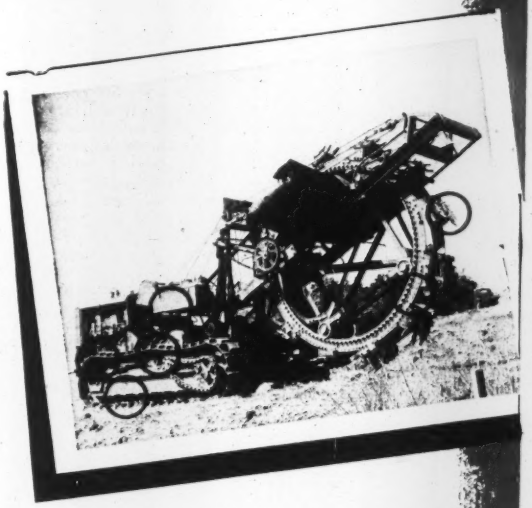
• **Best soil under light loads**—This chance choice of the south end for the lighter trucks was unfortunate because soil sampling along the edges soon revealed that the soil under part of the pavement at that end was of better quality than the soil under any part of the north lanes where the heavy trucks were operated. That fact

(Continued on page 84)

All around the ditcher

stoody hard-facing

Keeps parts in service . . . in better operating condition!



Have you tried this easy method of cutting equipment casualties . . .of fighting the impact and abrasive wear of steel against earth?

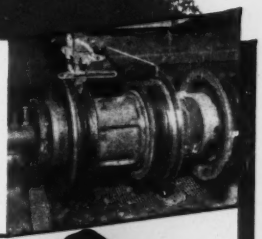
STOODY HARD-FACING is a simple, time-tried process. It makes wearing surfaces *more* wear-resistant. It cuts down time, repair and replacement costs *because hard-faced parts last longer!*

Applied by automatic or manual welding methods, Stoody Alloys usually double part life—or more. Ask your Stoody Dealer for details. He's listed in the Yellow Classified Telephone Directory under "Welding Equipment and Supplies."

AUTOMATIC HARD-FACING is now available in near-by job shops. Ask for recommended list of shops.

● TRACK ROLLS

Stoody 105 applied automatically makes track rollers as good or better than new—at less cost. Top carrier rolls last longer when hard-faced with Stoody 1027.



● DITCHER TEETH

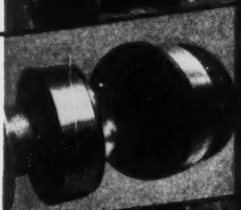
All types of ditcher teeth last longer with Stoody Hard-Facing. Normal life of teeth illustrated was 2800 feet of ditch. Protected with Tube Borium, 17,200 feet had been dug when photo was taken. Estimated total: 40,000 ft.

● IDLERS

are easily restored with Stoody 105, applied automatically, with longer life, lower cost. Note restoration of smooth, straight tire surfaces.

● CLUTCH BRAKE DRUM

Both these internal and external surfaces were automatically hard-faced with Stoody 107 then machined to a smooth surface for more wear resistance than new.



● BULL GEARS

Manual hard-facing pressure sides of gear teeth with Stoody Self-Hardening restores tooth size—at least doubles useful life. Gear teeth can be touched up as required.

NOTE: Wherever you see tractors, cranes, power shovels and other heavy equipment STOODY ALLOYS are on repair jobs. The Stoody Hard-Facing Guide Book shows you how. Ask for copy!

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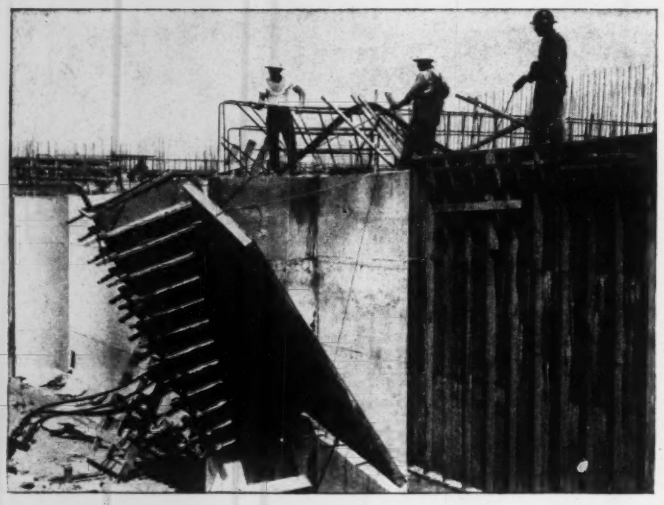

When Speed Counts–Specify Plywood Forms

WHEN THE JOB has to be done on the double, plywood concrete form panels* shave weeks off work schedules . . . cut form work application time and costs up to 25%. Plywood's every feature suits it for quick construction. It's light, tough, rigid . . . easy to work with ordinary tools. Big sheets cover large areas . . . are ideal for fabrication into cost-cutting built-up form sections. Plywood forms cut finishing time, too. Bridge, factory or apartment—plywood forms are adaptable to *every* type of concrete construction. For free catalog, write Douglas Fir Plywood Association, Tacoma 2, Washington.

Only Plywood Offers All These Advantages

- Plywood forms create smooth, fin-free surfaces
- Economical! Plywood forms can be used over and over
- Plywood forms speed work—save time and labor
- Plywood is strong, rigid—yet light, easy to handle
- Plywood forms are puncture-proof, water and mortar tight
- Plywood has superior nail and tie holding properties
- Plywood is easy to work with hand or power tools
- Plywood provides sheathing and lining in one material

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Plywood

AMERICA'S BUSIEST BUILDING MATERIAL

*Several plywood grades are manufactured for concrete form work. *Interior Plyform*® is made with highly moisture-resistant glues which permit multiple re-use (up to 10 to 15 are not unusual). For maximum re-use specify *Exterior-type PlyForm*®, bonded with completely waterproof adhesives. For special architectural concrete, use Exterior or Interior plywood grades with "A" face veneer—or one of the new plastic surfaced or hardboard-faced plywood panels.

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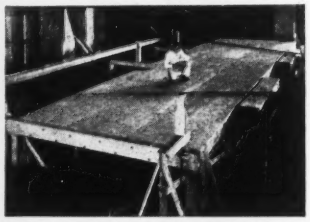
PANEL DISCUSSION

Diaphragm Tests Prove Plywood Shear Strength



New specific design data which proves plywood's great resistance to shear forces set up by earthquakes and windstorms have been developed by plywood industry engineers in one of the most significant research projects of recent years.

Culminating 14 months of study, the new design data permits architects and engineers to specify plywood floor and roof construction with full confidence that the structure will withstand the great lateral stresses and shears due to high winds or seismic shocks which may be encountered in schools, warehouses, commercial and industrial structures.

As one result of this new design data, the Uniform Building Code has been amended to permit greater allowable plywood diaphragm shears. The new allowable lateral loading for plywood diaphragms are given below in condensed tabular form:

		Shear (lb-per-ft.-width) 2⅜" framing		
Plywood Thickness	Nail Size	Nail Spacing on all panel edges		
		6"	4"	3"
5/16", ⅜"	6d com.	185	280	315
⅜", ½", ⅝"	8d com.	265	400	450
½", ⅝"	10d com.	320	480	545

Tabulated shears should be reduced one-fourth for other than wind or seismic loads. Diaphragm width measured parallel with load.

In developing the material, it was assumed initially that a plywood floor or roof diaphragm would function as the load bearing web in a giant girder. Following tests with scale models, four full-size models were constructed using ½" plywood nailed across 2x10 joists. Sections were loaded with a truss system in which the loads were applied with two 30-ton hydraulic jacks.

Based on 15,000 numerical observations it was found that a floor or roof sheathed with plywood acts as a horizontal girder with a fully shear resistant web. This means that stresses in individual parts and the deflection of the member as a whole can be accurately calculated.

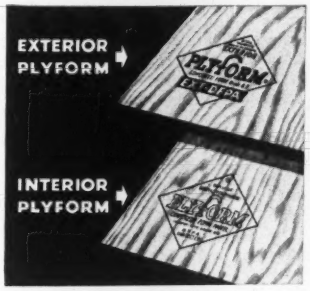
Complete data on the tests, including simplified design information and a table of shears for various constructions are available free of charge from Douglas Fir Plywood Association, Tacoma, Wash.

(Advertisement)

PlyForm Grade Plywood Now Made In Two Types

West Coast plywood manufacturers are now using the familiar PlyForm grade-name to identify the special concrete form grades within both Interior and Exterior type.

Exterior-type PlyForm, a new grade-trademark, replaces the old Exterior Concrete Form grade-name. Identified by the new diamond-bar symbol shown below, Exterior PlyForm with 100 per cent waterproof glue is intended for use where forms will be re-used until the wood



itself is worn away, in excessively humid areas, or under extreme use or storage conditions. It is edge sealed with a distinctive red sealer.

Interior PlyForm is now manufactured with newly fortified moisture-resistant glues which, although not waterproof, will withstand as many as 10 or 15 re-uses. Interior PlyForm continues to be identified by the familiar diamond grade-trademark. Edges are sealed with distinctive green sealer.

Both face and inner-ply construction of Interior and Exterior PlyForm are the same: faces are of B veneer which is smooth and solid but may contain small tight knots and neat circular repair plugs; inner ply construction (as in all Exterior fir plywood) of C veneer contributes to panel strength and rigidity. A folder which gives additional details and information on other plywood grades used for form work is available from Douglas Fir Plywood Association, Tacoma, Washington.

Slide Rule Calculator For Plywood Forms Available

A handy new slide rule calculator which gives construction data for plywood forms is available for $1.00 from Douglas Fir Plywood Association, Tacoma 2, Washington. Included with the new calculator is the leaflet "Design Assumptions for the New Keely Calculator."

When Re-Use Counts– Specify Plywood Forms

MEASURED in terms of cost per use, Douglas fir plywood* ranks as one of the most economical of all form materials. On apartments, office or factory buildings, plywood form sections can be used to job completion—eliminating the expense of rebuilding forms once the job is under way. Plywood deserves ordinary care in handling, but it does *not* require extreme caution at every step and is far more rugged than other panel type materials. The exact number of re-uses obtained vary with grade and the care it receives on the job. Builders report up to 10 to 15 re-uses with *Interior-type PlyForm* . . . twice as many with *Exterior-type PlyForm* and new overlaid plywood panels. See grade data below.

Only Plywood Offers All These Advantages

- Plywood forms create smooth, fin-free surfaces
- Economical! Plywood forms can be used over and over
- Plywood forms speed work—save time and labor
- Plywood is strong, rigid—yet light, easy to handle
- Plywood forms are puncture-proof, water and mortar tight
- Plywood has superior nail and tie holding properties
- Plywood is easy to work with hand or power tools
- Plywood provides sheathing and lining in one material

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AMERICA'S BUSIEST BUILDING MATERIAL

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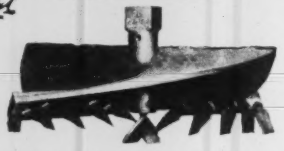
THE PENGO EARTH AUGER



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★ All wearing parts replaceable on job!

★ Made in 15 sizes, 10" to 54" hole diameters, to fit all makes of heavy-duty earth boring machines. Larger sizes on order.

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★ Easy installation—welds to your present helix.

★ Bores where you never could before!

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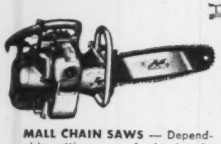

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has been widely used by the trucking industry to support its claim that the damage done to the pavements over which the heavy trucks operated can not be compared with the damage caused by the more lightly loaded trucks.

After the test runs had been completed, soil samples were taken through many core holes and in areas where slabs were removed. While they do show that 27% of the slabs in the 18,000-lb lane and 25% in the 22,400-lb lane were on a granular material classified by the HRB system as A-1, they also show that 56% and 54% respectively were on an A-6 soil similar to that under 68% of the slabs carrying 32,000-lb loads and 65% of the slabs carrying 44,800-lb loads on tandem axles. Soil classified as A-6 "pumps" easily.

The detailed soil classifications also show that more of the slabs in the two heavily loaded lanes (18% and 21%) were on another poor soil (A-7-6) that is susceptible to pumping as against on 11% of the slabs under each of the lighter loaded lanes.

• **Cracking used as a measure**—Progressive pavement cracking caused by repeated passage of the test vehicles was used as a measure of the relative effect of the several axle loadings. Consequently, no undersealing was done during the tests to minimize the effect of pumping because experience has shown that undersealing frequently produces additional cracking. However, joints in the pavement were sealed 11 times during the 6-month test period, and shoulder maintenance work was carried out 23 times.

The report states further that "it was felt that if undersealing was completely effective in preventing cracks due to applied load, there would be no visible basis for evaluating the effect of the varying loads."

This decision, not to underseal, also has been criticized by the trucking industry as detracting from the usefulness of the results.

• **Major findings**—All visible cracks in the pavement at the start of the test runs were carefully marked and recorded. That made it possible to measure new cracks as they developed.

The report gives full details of these measurements over all types of soil, but in view of the better grade soils under part of the south lanes, the significant figures appear to be those relating to slabs on the A-6 soils. These figures are given in the accompanying table.

(Continued on page 86)

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AMOUNT OF CRACKING PER SLAB ON A-6 SOIL

Loading	Lineal Feet of Cracks Per Slab	Number of Applications
(Period ending Oct. 13)		
18,000-lb Single axle	None	152,876
32,000-lb Tandem axle	4	92,363
22,400-lb Single axle	13	146,332
44,800-lb Tandem axle	50	92,166
(Period ending Dec. 23)		
18,000-lb Single axle	4	238,231
32,000-lb Tandem axle	15	164,523
22,400-lb Single axle	28	238,262
44,800-lb Tandem axle	Discontinued Oct. 13	

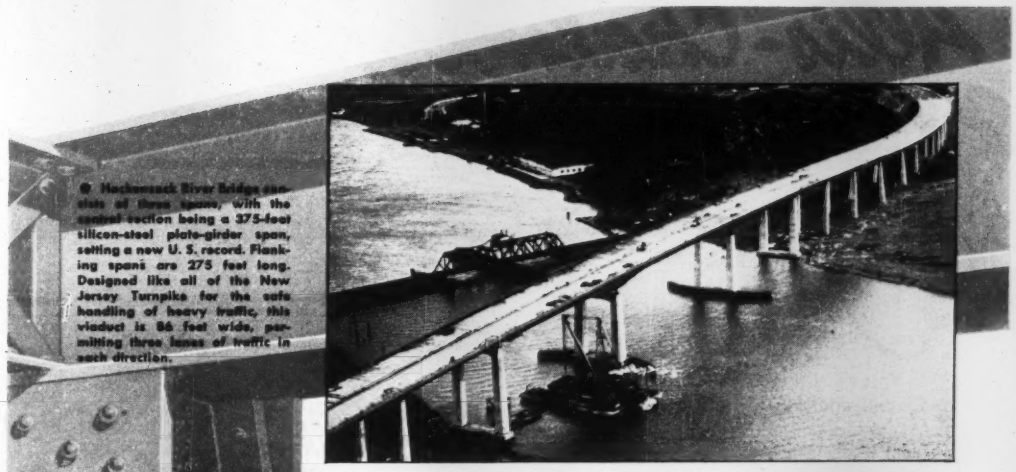
Concerning the data given in that table, the report says: "No slab cracking developed in the 18,000-lb single-axle test section laid on A-6 soil during the period ending Oct. 13. The first crack, however, occurred on this section on Oct. 15. The average cracking increases in the order of the 18,000-lb single axle, the 32,000-lb tandem axle, the 22,400-lb single axle, and the 44,800-lb tandem axle."

• **Effect on joints**—Again considering only the slabs lying on A-6 soil the report states: "Under continued action of loads operating from the beginning of the test Oct. 2, 1950, with traffic operating on all four test lanes, the joints of the slabs laid on A-6 soil were depressed an average of $\frac{3}{16}$ in on the 18,000-lb lane, $\frac{1}{4}$ in on the 32,000-lb lane, $\frac{3}{8}$ in on the 22,400-lb lane and $\frac{7}{8}$ in on the 44,800-lb lane."

• **Findings widely applicable**—Concerning the A-6 soil, the report says that it is typical of soils underlying an extensive mileage of concrete pavement in this country.

The report goes on to say, in effect, that for this extensive mileage the type of pavement under study is not adequate for an 18,000-lb axle loading when traffic reaches a high density. On that point it says "the occurrence of pumping, cracking, and settlement of the pavement under the 18,000-lb single-axle load in sections laid on the A-6 soil showed that the combined supporting ability of the pavement and subgrade in these sections was slightly less than adequate for the axle load of 18,000-lb applied at the frequency maintained in the test."

On the other hand, for good granular soils of the non-pumping type such as were found under part of the southerly sections of the test road, the static load tests showed that stresses in this pavement, even under the heaviest truck loading, were not above normal design limits.



● Hackensack River Bridge consists of three spans, with the central section being a 375-foot silicon-steel plate-girder span, setting a new U. S. record. Flanking spans are 275 feet long. Designed like all of the New Jersey Turnpike for the safe handling of heavy traffic, this viaduct is 86 feet wide, permitting three lanes of traffic in each direction.

American Bridge Protects New Jersey Turnpike's Hackensack River Bridge With

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4. Provides optimum protection against metal corrosion during shipment and erection; also serves as the foundation coat for the field painting system.
5. In addition to meeting ASTM Specification D-234-48 and Federal Specification TT-O-369 covering Raw Linseed Oil, XLO Structural Steel Primer provides a plus in drying over specification requirements.

● **One of the vital links** of the 118-mile New Jersey Turnpike is the $9,500,000 Hackensack River Bridge opened earlier this year. This important portion of the new toll highway which connects the New York metropolitan area with points south, is 5,623 feet long. Spans for this viaduct were fabricated and erected by the American Bridge Division, United States Steel Company.

● **Pittsburgh is proud** that its new XLO Structural Steel Primer was used to safeguard these record-size girders during transit and erection. This new kind of primer is derived from linseed oil, combined with red lead and iron oxide pigments to provide protection for all kinds of fabricated structural shapes during transit, erection and before application of field coats. It is also furnished with 100% red lead, if desired. A variety of IRONHIDE coatings are also available in a range of colors suitable for field coat application.

● **For further information** write, wire or phone Pittsburgh Plate Glass Company, Industrial Sales Division, 2000 Grant Building, Pittsburgh, Pa., or any of the factories listed below.

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ditching is fast, accurate, complete. Hydraulic power goes to work for you the instant you start to turn . . . does most of the steering work for you. As a result you can turn far easier, far faster . . . work right up to culverts, poles or other obstructions before turning out.

plowing snow — always a tough job due to added front-end weight of either blade or rotary unit—becomes much simpler . . . much more accurate when hydraulic power steering goes to work for you.

muck, sand, soft ditches are back-breakers no longer. Thanks to power steering, you pilot the wheel rather than wrestle it. Because of it, you can blade and turn at the same time.

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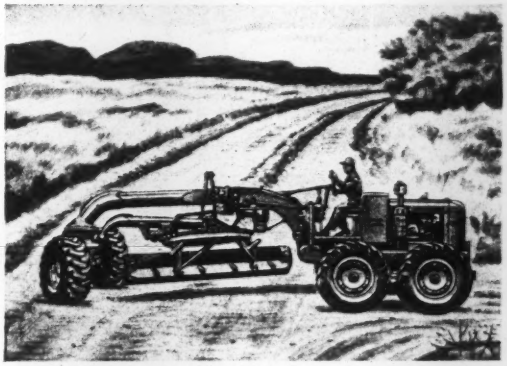
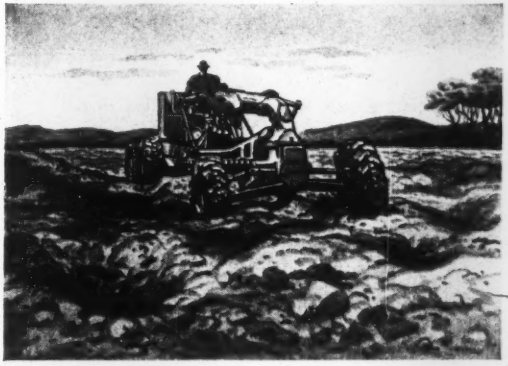


turning around is quick, easy, safe. With built-in power steering you can turn with just one finger—even while stopped. Fast, precise control greatly cuts down interference with moving traffic . . . gives you safe command even on dangerous mountain turns.

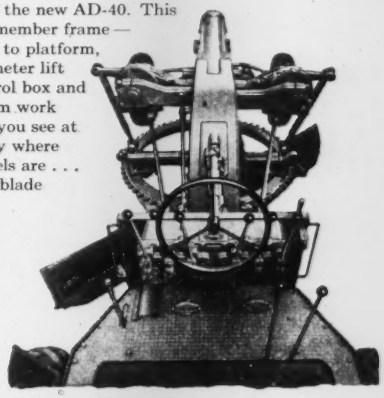
bank sloping is easier with the AD-40. Power steering gets you into position fast . . . lets you operate on steep slopes without the tiring "wheel fight" you've always known before. In addition, ease of control assures a smooth, even grade on every job.



holes and bumps cause no "wheel kick" because this new system cushions shock . . . keeps jolted front wheels from "steering back" at you. You turn only when you want to turn.

you get full visibility, too!

Here's the view you have from the platform of the new AD-40. This grader's single-member frame — from front axle to platform, its smaller diameter lift cases, low control box and tapered platform work together to let you see at all times exactly where your front wheels are . . . just what your blade is doing.

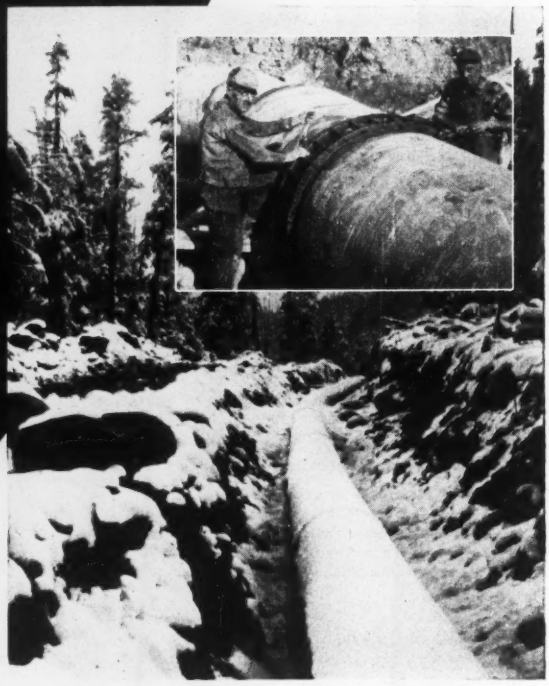


ALLIS-CHALMERS

TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

DENVER, COLO.—At 9,400 ft. elevation and 10° temperature, construction of Denver's new 54" Ranch Creek line went forward with steel pipe joined by Dresser Couplings. The line carries water to the Moffat Tunnel to help provide for Denver's rapid growth.

A DRESSER-COUPLED STEEL LINE delivers water cheaper



No matter if your problem is terrain . . . weather . . . labor . . . or time . . . the cheapest way to deliver water to the place where it turns into revenue is with a Dresser-Coupled steel line. It's the experienced engineer's way to get a superior line and still reduce *installation* and maintenance costs . . .

Once you have discovered the ease of construction of such a line, you'll know why more and more engineers specify them every year. Long, strong sections of steel pipe are easily put in place and quickly joined with factory-made, virtually foolproof Dresser Couplings. Construction proceeds rapidly even over rugged terrain like that shown here.

Leakage losses are eliminated. *Controlled gasket pressure*, provided by the bolting up process in a Dresser Coupling, is your assurance of the correct *sealing* pressure all around the joint. Resilient Dresser gaskets absorb stresses from vibration, contraction and expansion, yet keep the joint "flexible-tight".

Maintenance is cut to the bone, too. Dresser Couplings last for life, and the absence of heat in joining prevents damage to glass-smooth pipe linings. High carrying capacity is sustained.

Experience all over the world proves that a Dresser-Coupled steel line gives you the ultimate in performance and economy. See your Dresser Sales Engineer or write our Bradford Office for literature.

Be Sure you, too, get the best line at the best price. Put steel pipe and Dresser Couplings in your specifications.

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"FLEXIBLE-TIGHT"

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Dresser Manufacturing Division, 59 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston, Texas; 101 S. Bayshore Highway, South San Francisco, California. Sales Offices: New York, Philadelphia, Chicago, Houston, South San Francisco. In Canada: 629 Adelaide St., W., Toronto, Ont.

LEGAL

In some states, local statutes provide that it shall be unlawful for any person to engage in the business or act or offer to act in the capacity of a contractor without obtaining a license therefore.

In a recent case[1] a contractor who had permitted his license to expire but had applied for a renewal entered into a contract to do some construction work. As the work was completed before the renewal of the license was granted, the court held that he was not entitled to recover for the work performed.

The court, in its opinion, stated: "Our holding in Desmet v. Sublet supplies the answer to the question presented. We quote: "It is a well settled rule of law that a person cannot maintain an action if, in order to establish his cause of action, he must rely, in whole or in part, on an illegal or immoral act or transaction to which he is a party, or where he must base his cause of action, in whole or in part, on a violation by himself of the criminal or penal laws'."

The court further held that the fact that the party for whom the work was being done knew that the contractor did not have a license did not prevent that party from asserting the defense that the contractor had failed to comply with the statute requiring him to obtain a contractor's license.

(1) Kaiser v Thomson et al., 232 P. 2d 142, Supreme Court of New Mexico, May 9, 1951.

Arbitration of disputes

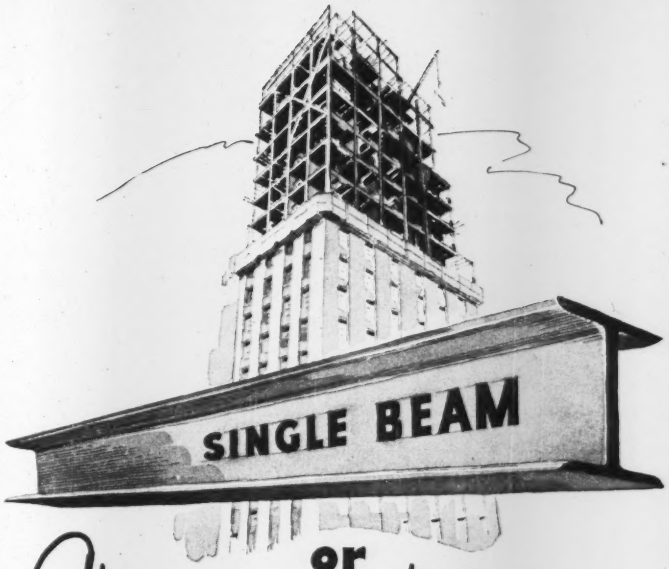
A construction contract contained the following provision: "In case any dispute arises between us in respect to any matter connected with or relating to said work or this agreement, the same shall be submitted to said architect for decision, which shall be final and binding upon both of us."

The court held that the above clause of the contract was a valid arbitration clause, even though the word "arbitration" was not expressly used in the contract.[1]

The mere commencement of a suit does not constitute a waiver of the right to compel arbitration of disputes.[2]

(1) Bertram Garden Apartments v De Martini, 108 N.Y.S. 2d 483.
(2) Richard Nathan Corp. v P. Diacon-Zadeh, 101 N.Y.S. 2d 428.

(These summaries are prepared by I. Vernon Werbin, New York attorney and civil engineer.)



or Skyscraper skeleton...

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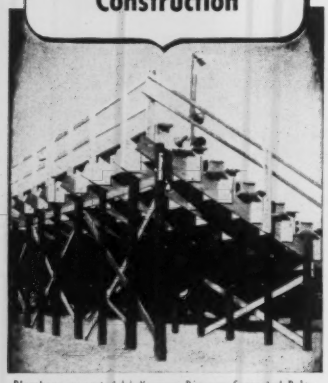

Bleachers supported by Koppers Pressure-Creosoted Poles.

LAST FALL, the high school in Yuma, Colorado, needed more seats for spectators—needed them in a hurry. *Within a few days*, the 90-foot bleachers shown here were built by the local Lions Club.

No Foundations Required

The pole-type method of construction, used in building these bleachers, speeds up and simplifies the erection of many different kinds of structures, from newsprint warehouses to barns. No foundations are required . . . structures are carried by poles that go deeply enough into the ground to provide solid support and strength. Costs can be cut almost in half, yet the completed structures can be just as permanent and practical as the more expensive, conventional type.

Poles Are Important

With this kind of construction work, the *quality* of the poles is important. Koppers Poles are made from sound, strong wood. Pressure-treatment with creosote is deep and thorough, protecting poles against rot and termites. Koppers Poles give decades of good service, making them extremely economical. They require no painting and never rust.

If you have a question about pole-type construction please write to Wood Preserving Division, Koppers Company, Inc., Pittsburgh 19, Pa.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

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FIELD AND OFFICE

LOCK FENDER—Made of steel sheetpile material, the lock-gate fender to which Frank C. Gerwig is pointing promises to save the State of New York $4,000 or $5,000 annually in lock maintenance costs. Now installed on a few gates, the fender will go on the gates of all 60 state-owned locks as wooden fenders require replacement. The latter, made of 8x8-in. timbers, absorb crushing and tearing action from barges. The new fenders are said to perform fendering action just as well without the damage. Sheetpiles are standard deep-web sections $\frac{3}{8}$ to $\frac{1}{2}$ in. thick. Reinforced by welded-in diaphragms every 3 or 4 ft, they are welded to the canal gate structure at all points of contact. Chamfered ends make it impossible for barges to strike the fender head-on—a fruitful source of damage in the case of square-cut timber fenders. Mr. Gerwig, canal section superintendent at Amsterdam, N. Y., developed the new fender and received a $400 suggestion award from the New York State Department of Public Works.

Welded reinforcing bars cut hospital project cost

Seventy tons of reinforcing steel and at least $18,200 have been saved by welding reinforcing bars at splices in concrete columns in the 165-bed Peninsula Hospital, Burlingame, Calif.

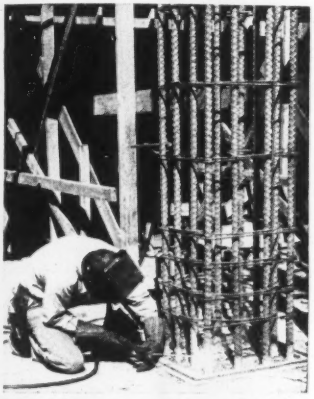
On this $4 million job, 7,100 splices had to be made. Had tied splices been used, 5,221 tons of reinforcing column bars would have been needed. Welded splices for the 1¼ in. dia bars saved 21 lb per splice. At 8 c per lb, $1.68 was saved per splice. Welding time didn't cut much into that $1.68 saving.

In addition, a further cost cut of at least $7,000 was effected because the welded splices permitted smaller column dimensions. Two inches were cut off the sizes needed for lapped splices.

Reduction in size of corridor columns resulted in a decrease in transverse spacing of corridor columns and thus of the floor areas required for corridors. And in some cases, the reduced column size saved floor areas in bays adjacent to the corridors. Reduction of about 470 sq ft of floor area in addition to the $7,000 cost saving resulted.

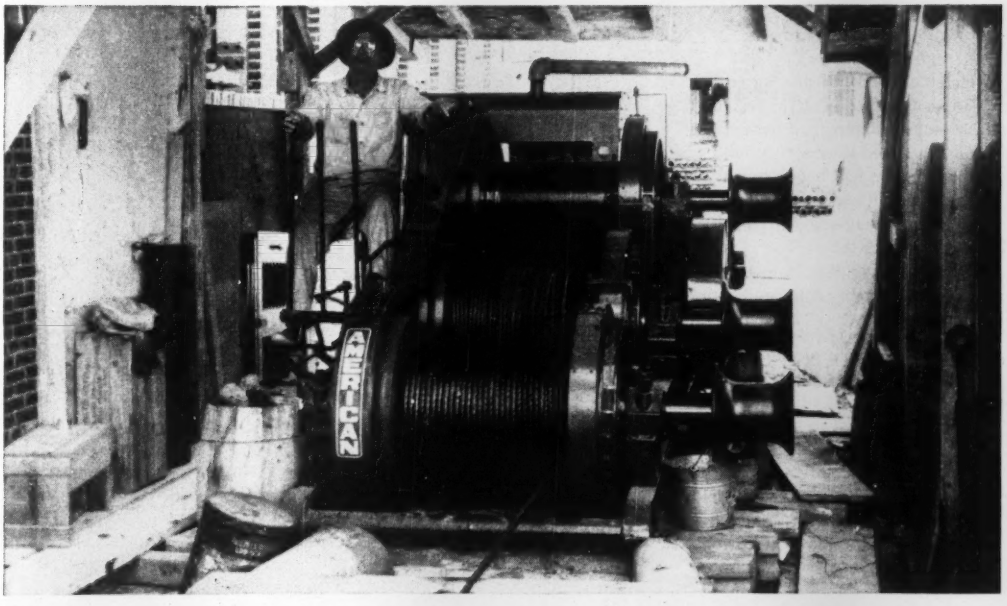
Where column sizes changed, welded splices reduced the need for bending column reinforcement.

The San Francisco firm of Stone and Molloy and S. P. Marraccini, associate architect, designed the hospital. Structural engineers were Adrian, Graham and Hayes, of the same city.



WELDER splices column bars for hospital in Burlingame, Calif.

Outselling all others



THIS year, as for many years past, contractors are buying more American construction hoists than those of any other make. We make this statement not as a matter of pride for us (although it is) but as a clue to smart purchasing for you.

The picture above shows a 3-drum Model 75 American General Purpose Hoist, owned by R. P. Farnsworth & Co. Inc., New Orleans, at work on a new dormitory at Tulane University. It is one more proof of the fact that experienced, successful builders—who know their costs down to the penny—have a distinct preference for American hoists.

A full list of the "reasons why" would show dozens of design features, engineering features, assembly features quite different from those of other hoists. But the simple facts are that American hoists work better on the job, stay on the job longer, and —most important of all—*make more money for their owners.* That's why they outsell all others.

Is this the kind of equipment you want? If so, choose your next hoist from the world's broadest line, through your American distributor.

Modernize.. economize...with

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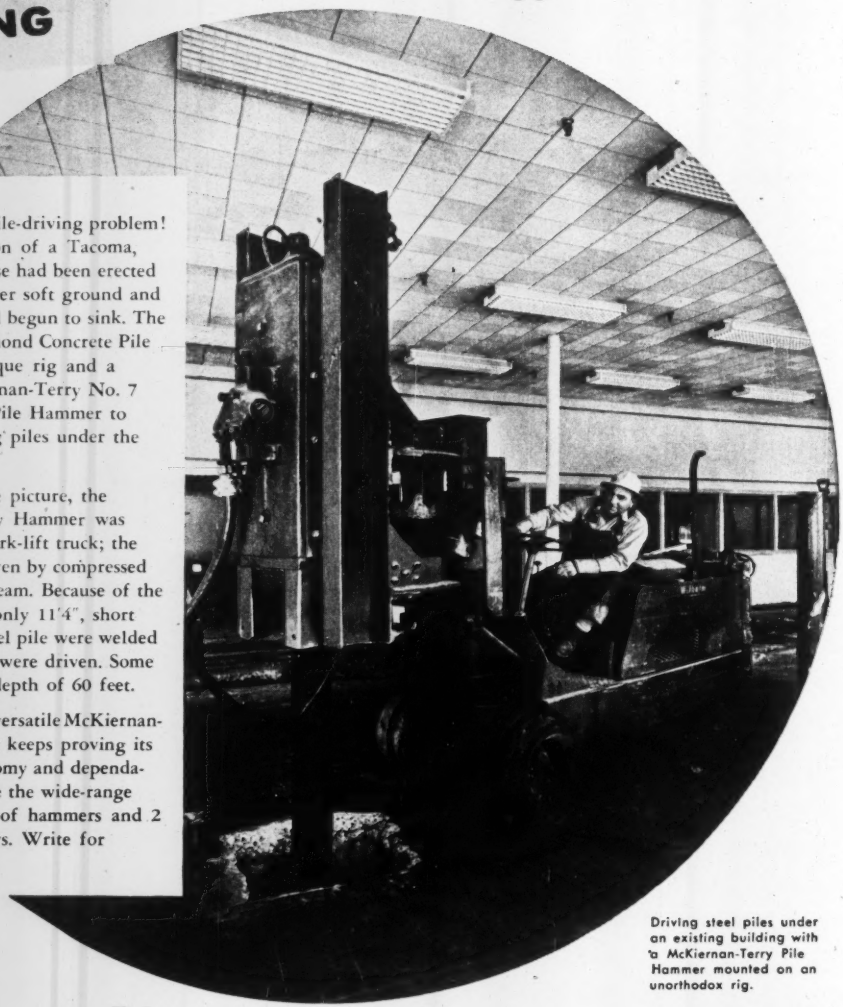

Here's a novel pile-driving problem! The office section of a Tacoma, Wash., warehouse had been erected on fill placed over soft ground and the structure had begun to sink. The contractor, Raymond Concrete Pile Co., used a unique rig and a versatile McKiernan-Terry No. 7 Double-Acting Pile Hammer to drive reinforcing piles under the building.

As shown in the picture, the McKiernan-Terry Hammer was mounted on a fork-lift truck; the hammer was driven by compressed air, instead of steam. Because of the low headroom, only 11'4", short sections of 6" steel pile were welded together as they were driven. Some piles reached a depth of 60 feet.

On job after job, versatile McKiernan-Terry equipment keeps proving its piledriving economy and dependability. Investigate the wide-range line of 16 sizes of hammers and 2 sizes of extractors. Write for bulletin.

Driving steel piles under an existing building with a McKiernan-Terry Pile Hammer mounted on an unorthodox rig.

OTHER McKIERNAN-TERRY PRODUCTS

MEAD-MORRISON COAL AND ORE UNLOADERS AND BRIDGES
Available in a variety of designs and in capacities of 300 to 1500 tons per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable and speedy operation.

GRAB BUCKETS
Range of types and sizes take bulk materials loads up to 25 tons. Ruggedness without excess weight.

HONING UP TO 42-IN. I.D. X 55-FT. LONG
Typical of the extensive facilities of McKiernan-Terry for unusual jobs.

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MK 323

MEETINGS

ASTM to decide changes on specifications soon

Dozens of new or amended specifications of vital importance to the construction industry will come up for final consideration June 23, when the American Society for Testing Materials holds its 50th anniversary meeting in New York.

The new specifications—results of more than 250 meetings of technical sub-groups of the society during the year—include these important revisions or new rulings that will affect present practices, plus some new or unique feats of construction:

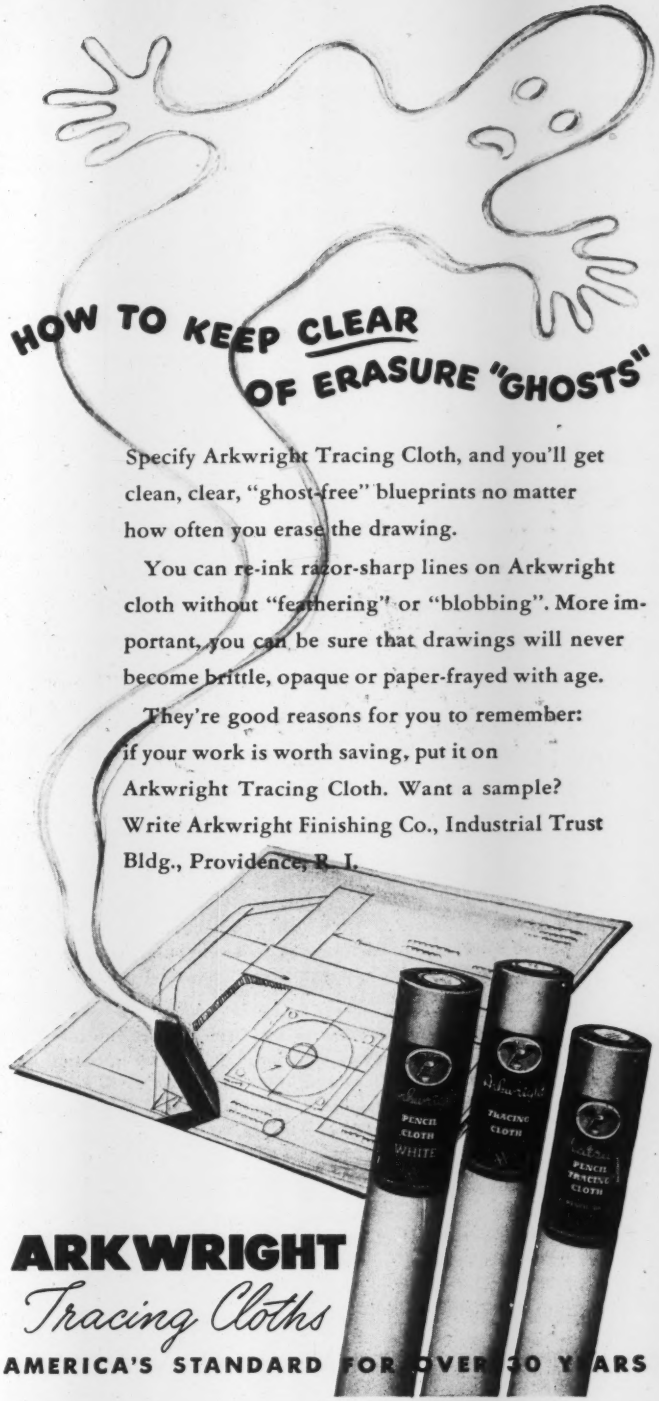
Committee C-1 on Cement recommended adoption of a revision in the specifications for portland cement (C150) so that it will fully recognize the division between normal portland and air-entraining portland cements as far as air content is concerned. The dividing point is established at 15% by volume.

Committee C-9 on Concrete and Concrete Aggregates recommended three variations of freezing and thawing tests for evaluating aggregates and concrete. They consist of rapid freezing and thawing in water; rapid freezing in air and thawing in water; and slow freezing and thawing in water or brine.

An additional method was accepted in non-destructive testing, to be added to ASTM Standard C215. It is a test for fundamental transverse and torsional frequencies of concrete specimens. This method will enable Young's modulus of elasticity, the modulus of rigidity, and Poisson's ratio to be calculated on concrete prisms and cylinders.

A standard source of color standards is being developed for determining organic impurities in sands for concrete (C40). A proposed test and a specification for fly ash were reviewed to establish a uniformity requirement.

• **For hardened concrete**—Data were collected from a cooperative series of tests for determining the cement content of hardened concrete. Good agreement was obtained on samples using normal aggregates. The soluble lime method is most suitable where siliceous materials are involved, whereas the soluble silica method is more useful for calcareous materials. A revision of ASTM Method C85 will include addition of the soluble lime method and a statement authorizing the acceptance of the lower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Specify Arkwright Tracing Cloth, and you'll get clean, clear, "ghost-free" blueprints no matter how often you erase the drawing.
You can re-ink razor-sharp lines on Arkwright cloth without "feathering" or "blobbing". More important, you can be sure that drawings will never become brittle, opaque or paper-frayed with age.
They're good reasons for you to remember: if your work is worth saving, put it on Arkwright Tracing Cloth. Want a sample? Write Arkwright Finishing Co., Industrial Trust Bldg., Providence, R. I.
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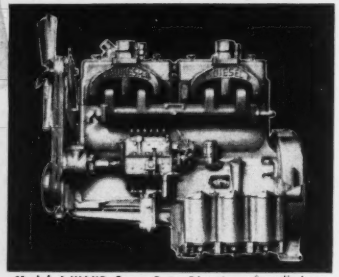
WAUKESHA Diesel



Model 6-WAKD Super-Duty Diesel — six cylinders, 6¼-in. bore x 6½-in. stroke, 1197 cu. in. displacement

...helps to extend CAPE COD HIGHWAY

This is the contractor's Diesel. A heavy-duty six-cylinder, four-stroke cycle, overhead valve engine—it has the power and puts it out smoothly and smartly—all the load demands, when the operator commands.

On this job—an extension of the Cape Cod Highway—a Waukesha 6-WAKD powered *Lorain* 820, with 65-ft. boom and 1¼ cu. yd. clamshell, moved 2000 cu. yds. of earth each and every 10-hr. day. And the Waukesha Super-Duty Diesel used 35 gal. of fuel per 10-hr. day.

High fuel economy is the result of that exclusive Diesel design feature—the patented combustion chamber which gives this Waukesha engine the ability to burn cleanly all modern high speed Diesel fuels of 45 cetane or above. That's the why of its lively acceleration, shock-free operation, low upkeep and long life. And, it's easy to start. For its many other advanced design and construction features, send for Bulletin 1415.

177

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NEW YORK TULSA LOS ANGELES

cement content value when the lime and silica values are not the same.

A proposed test for determining the setting rate of hydrated lime is being circulated for comment by ASTM Committee C-7 on Lime. Setting time requirements in lime specifications are to conform to the method of test for cement.

A proposed specification for sulfur mortars has been developed to cover sulfur mortars to be used in chemical-resistant construction, especially for joining chemical-resistant masonry. Also, a proposed method will augment the tentative method of test for chemical resistance of hydraulic-cement mortars (C267).

• **Steel and wood**—Subcommittee II of Committee A-1 on steel acted on the modification of the elongation requirements of relatively thin materials, below 5/16 in. thickness. The committee is inserting in General Requirement Specification A-66 permission to select a specimen at random for retest. Also, there is to be inserted in the structural-steel purchase specification A-7, a reference to the use of malleable iron when agreement has been reached, very probably listing grade 35018. This standard covers by reference to other specifications quite a number of materials used with structural steel.

A new sub-committee on wood to cover fiberboards has been authorized. The standard Specification for Round Timber Piles (D25) was revised. Some changes have been made in diameter limits, mainly under Class A piles, and circumference figures have been added. Revisions of Testing Small Clear Specimens of Timber (D143) and Testing Plywood, Veneer, and Wood-Base Materials (D805) also were accepted.

Discuss engineer shortage

How to alleviate the current shortage of engineers was the major topic for discussion at the annual meeting of the New York State Society of Professional Engineers, held in New York City, May 1-3. T. A. Marshall, Jr., executive secretary of the Engineering Manpower Commissioner of Engineers Joint Council, told what that agency is doing to get more young men interested in engineering.

Edward J. Noona, consulting engineer of Buffalo, was elected president of the society, and Thomas M. Linville of Schenectady was named a vice president. New directors are Vincent G. Terenzio, Clayton A. Muller, and John M. Lewis.

The telephone bell tolls loud and long for construction, quarry and stripping operators whose blasting creates excessive noise and vibration. Neighbors often threaten to ring the bell for good on future operations.

Generally, it is the "air blast" (air vibration) which irritates the neighbors. By longer confinement of the explosives force of a blast, the ROCKMASTER System practically eliminates this noise . . . uses the full power of the blast to break rock.

Some operators have found that they can greatly increase the size of their blasts and at the same time end the neighbors' complaints by switching to the ROCKMASTER System. To see how *you* can disturb more rock without disturbing your neighbors, send for your free copy of the 20-page ROCKMASTER book today.

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1 Here are eight holes ready to shoot. ROCKMASTER milli-second delay detonators are at the bottom of each hole to start action on the toe. This gives maximum confinement of explosives gases and thus minimizes air blast.

2 The only sound heard here was a dull rumble. The toe can be seen clearly moving out first. The confined power of the explosives plus the one-two punch of milli-second delays assures good fragmentation and *controlled* throw.

3 This is the height of the blast. There still are no escaping gases. The only large boulders are those few which were at top of the face and away from the twisting action of the milli-second delays. Remainder of rock is bite-size.

4 Here's the pile ready for the shovel. Bulk of rock is properly distributed. Face along line holes shows little or no backbreak. Another example showing that ROCKMASTER disturbs rock but not neighbors.

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American engineers advise French on high earth dam, their first

France, although dotted with notable concrete dams and a few rockfill structures, is just now completing plans for the start of its first earth dam, which will be one of the highest of this type in the world. To be located at Serre-Poncon in the southeast part of the country on the Durance River, it is the first of a series of developments planned to produce some 4 billion kw hr of electric energy on this stream.

As planned by Electricite de France (EDF), the national power agency, Serre-Poncon Dam, will contain 18.5 million cu yd of earthfill. It will be 390 ft high, 1,970 ft long and about 1,800 ft thick at the base.

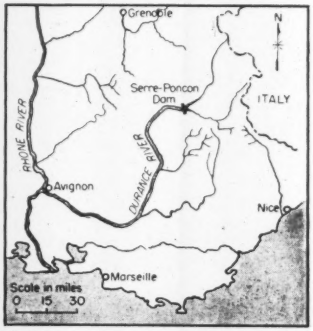
The only existing earth dam that has a comparable height is Mud Mountain or Stevens Dam near Tacoma, Wash. It is 425 ft high, but contains only about one-sixth as much volume as the French dam. On the other hand, Ambuklas Dam under construction in the Philippines will be about 430 ft high and contains some 9,400,000 cu ft—about half the volume of Serre-Poncon. Among big U. S. earth dams, Oahe being built on the Missouri will be the tallest, 242 ft, and it will contain 78,000,000 cu yd.

Last year, seeking authoritative advice on design criteria, dam location and materials selection, EDF engaged T. A. Middlebrooks and P. T. Bennet, soil mechanics and earthdam experts of the Corps of Engineers as consultants. They spent several weeks on the Durance and presented their conclusions in a report.

Now EDF is in the process of inviting design proposals from contractors or contractor groups. A call for these proposals will be made some time in June or July. In the meantime EDF has encouraged interested French contractors to seek the collaboration of foreign experts in preparing their offers. In at least two cases American engineers have been called in on this work.

Mason, Johnston & Associates, consulting geologists and engineers of Dallas, have been retained by the firm of Grands Travaux de Marseilles to work out a plan in collaboration with Arthur Casagrande of Harvard University.

In the other case, Harza Engineering Co. of Chicago has been engaged by the French firm, L'Entreprise Industrielle. One of the principal design problems to be solved, it is understood, is how to seal off the previous sand and gravel formation that extends some 300 ft deep at the site of the dam.



Serre-Poncon Dam, France's first earthfill structure, will be located in southeast part of the country.

When the time for letting a construction contract arrives (probably early in 1953) EDF plans to wrap the entire job up in one package. This would include highway and railway relocations, all tunnel work, the dam itself and an underground power plant where 270,000 kw of turbines would be installed to operate under a maximum head of 400 ft. The schedule calls for a job of 6 years' duration.

U. S. company designs large Brazil refinery

Construction has started on the expansion of Brazil's first modern oil refinery at Mataripe in the State of Bahia. Both the new and the original facilities were designed by The M. W. Kellogg Co., engineer-contractors of New York City. Kellogg Pan American Corp., supervises construction.

Modifications in the original plant, built for Conselbo Nacional do Petroleo, are being made to process the lighter crudes now available from local fields. Flexibility has been stressed so that the plants will be able to run any of the local crudes.

The expansion will double the capacity of the present 2500-bl-per-day combination thermal refinery.

(*International continued on page* 10)

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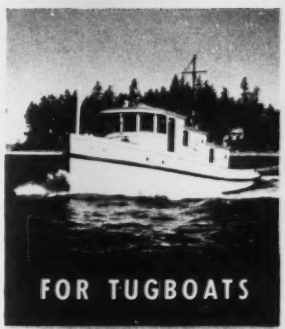

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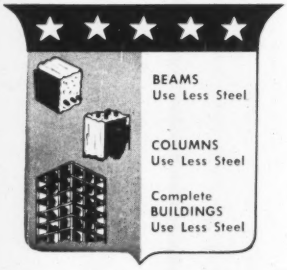


CONCRETE REINFORCING STEEL INSTITUTE • 38 South Dearborn Street, Chicago 3, Illinois

Wrecked Canadian bridge is being restored

The job of raising the washed-out Saskatchewan Landing Bridge (ENR April 10, p. 28) by 10 ft has begun. Dominion Bridge Co. is replacing the wrecked steel-work, which was hammered into the South Saskatchewan River April 6, and Bird Construction Co. of Regina is doing the concrete work.

Cost estimates have not been made public but the total is expected to be considerably higher than the estimated $200,000 it would have taken merely to replace the steel, which lost a 4-day battle with ice floes.

Ten feet must be added to the piers and six concrete approach arches.

When repaired, the 1,215-ft. bridge will be the highest low-level bridge in Saskatchewan on the South Saskatchewan River. It will be 41 ft. above normal water level. Restoration probably will be completed this year.

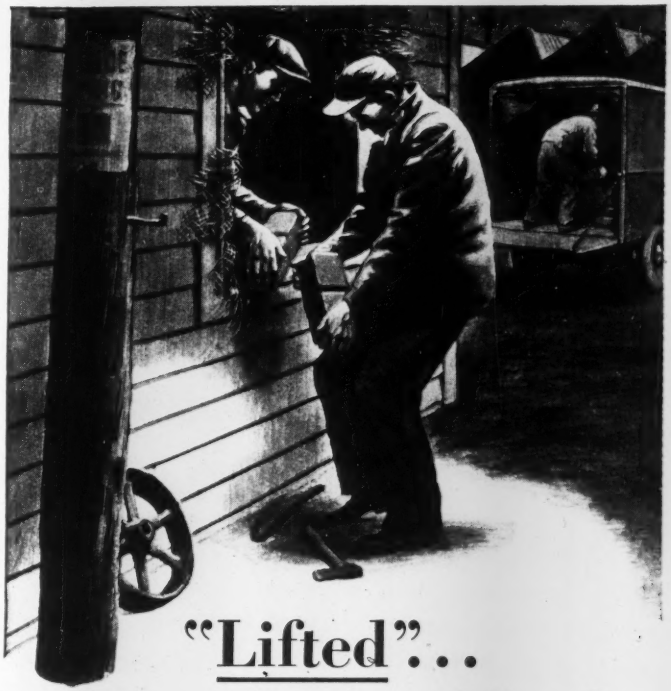
• **Build Far North bridge**—Canadian Army Engineers are building a 1,600 ft, $2.5-million bridge in the Donjek Valley of the Yukon Territory, less than 300 miles from the Arctic Circle. The bridge will provide an important communication link on the Alaska highway.

The 8-span steel and concrete bridge replaces a wooden one. Two wooden bridges have been washed out in the last two years.

International briefs

• **Sweden**—Installation of the third 96,000 kw Francis turbine this spring at Sweden's new Harspranget power project will put it well on its way to first place in size in Europe. When the fourth and last unit is installed the annual output will be 1.8 billion kwh compared to the present record holder, France's Genissiat Dam on the Rhone, with an output of 1.65 billion.

• **Surinam mission reports**—A mission under the leadership of Richard H. Demuth, director of Technical Assistance and Liasion for the International Bank for Reconstruction and Development, went to Surinam last October to study a provisional program for development drawn up by the Surinam Planning Bureau. It has now made a report recommending public expenditures of over $50 million during the next 10 years. Surinam, or Dutch Guiana, has an area of 46,058 sq mi and a coastline of 240 mi on the north shore of South America.



"Lifted"... three loads of lead

It could have been a heavy loss

(A true story based on Hartford Files #199B1838-199B1907-199B1908)

On our filtration plant job we kept all materials in a well-locked storage building. For one thing, we had a large stock of lead. During one twenty-five day period, our storage place was burglarized *three times*, and some forty pigs of lead . . . about two tons . . . were stolen. The lead was worth $801.96. But we carried Hartford Mercantile Open Stock Burglary Insurance, so our loss was paid in full.

* * *

In these days of high material costs, it doesn't pay to take chances.

Not on *anything* that's worth stealing.

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See your Hartford Accident and Indemnity agent, or your insurance broker. Ask about Hartford's Burglary Insurance, to take over where locks and watchmen leave off.

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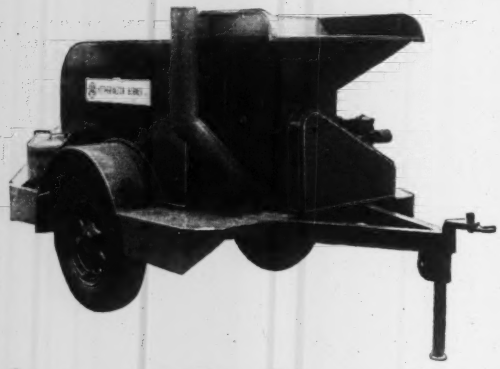

—a mobile mixing unit designed for easier, more economical road and street maintenance.

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Bulletin MP-51, giving specifications, flow diagram and complete information, will be sent on request.

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OBITUARIES

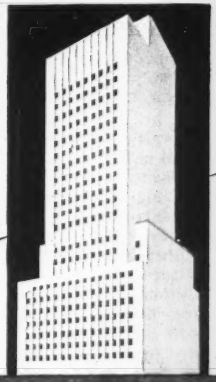
Alston Dana, 67, who played a leading part in the design of all of New York's large modern bridges, died May 12 at his home in Harrisburg, Pa. Mr. Dana was engineer of design for the Port of New York Authority when the Bayonne arch and the George Washington suspension bridge, both of world-record proportions, were built. Later he held a similar position with the Triborough Bridge Authority when the Triborough and Bronx Whitestone suspension spans were constructed. In the early 20's he had been assistant engineer of design on the Philadelphia Camden Bridge. Mr. Dana was a graduate of Harvard in 1906 and of M. I. T. in 1908. His early years were spent with the American Bridge Co. Just before the war he was consulting bridge engineer on the third locks project in Panama and later was chief engineer for Johnson, Drake & Piper, on their airbase work in the Middle East. Since about 1944 he has been with the consulting firm of Gannett, Fleming, Corddry & Carpenter in Harrisburg.

Raymond B. Traver, 61, former superintendent of the Onondaga County Highway Department, died May 6 in Syracuse, N. Y. An engineer, Mr. Traver retired in June 1951 after serving 29 years as head of the department. He was well known for design, construction and maintenance of secondary highways.

John A. McGrew, 78, engineer and inventor, died May 7 in Albany, N. Y. He had been granted 72 patents by the U. S. Patent Office. He was graduated from Ohio State University in 1895 as a civil engineer. He had been division engineer of the Pennsylvania Railroad on the lines west of Pittsburgh, maintenance engineer of the Chicago, Rock Island & Pacific Railroad and chief of maintenance of the Delaware & Hudson Co. During World War I, he was commissioned a major in the Army Corps of Engineers. He served in France and was in charge of the reconstruction and reclamation of the Port of Brest.

Bernard Herman, 76, chief engineer of the Southern Railroad System upon retirement in 1946, died May 1 in Washington, D. C. He received his engineering degree from the Massachusetts Institute of Technology in 1899 and joined the railroad a year later. He became assistant vice-president in 1920, and in 1924 chief engineer in charge of engineering proj-

extra white



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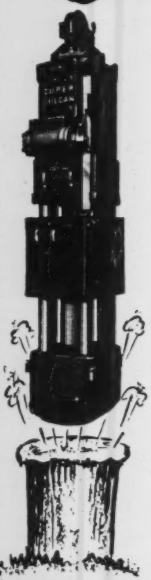

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OBITUARIES

ects and maintenance work of the 8,000-mile railway system in 13 states.

Robert L. Wing, 55, supervising hydraulic engineer for the California Division of Water Resources, died in Indio, Calif., April 30. A graduate of Stanford University in 1921, Wing served as county engineer of Santa Clara County for one year; two years as assistant engineer for the Southern Pacific Railroad. He began his career with California in 1924 as assistant engineer for the water resources division. He took an active part in investigations of water projects in the state and assisted in the preparation of the California Water Plan, the forerunner of the present Central Valleys Project.

Prof. Wilhelm Loos, 62, well known German scientist and technician, died recently. After his course at the Technical High School at Darmstadt, he was active in underground workings in various Rhineland cities. From 1921 to 1931 he was in the Dutch Indies where he had a wide experience in bridge and dock build-

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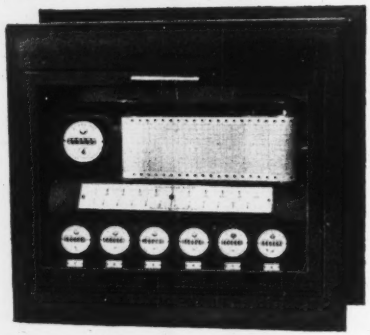

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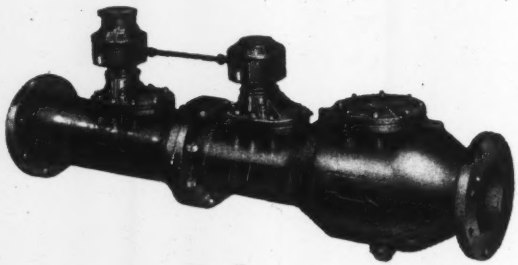
Type 285-2B combines the readings from two meters; and so on.

Quotations and Bulletin 311 come at your request



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ing. Later he taught in various German technical institutions. Last year he was made honorary professor of foundations, tunnel work and construction operations at the Technical High School of Karlsruhe.

Charles A. Myers, 59, Mason, Mich., design engineer with the State Highway Dept. at Lansing, died April 24.

Robert Lee Greenlee, 88, of Marion, N. C., retired civil engineer with a long career as engineer on railroad, water installation and municipal projects, died May 1. He was a graduate of the University of North Carolina engineering school.

Oscar N. Lindahl, 67, executive director of Pennsylvania's General State Authority, died May 6 at Harrisburg. A retired vice-president of Carnegie-Illinois Steel Corp., he became the first directing head of the GSA in 1949. He directed the construction of more than $100,000,000 in state projects. He retired from Carnegie-Illinois, a subsidiary of U. S. Steel, after 42 years of service in 1949.

On this construction job a fleet of Prime-Movers carry the load. They're at it all day long dumping 10 cu. ft. a trip. The manpower saving alone soon pays for the investment. Bucket returns to load position automatically. Powered forward and reverse.

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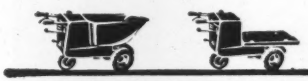

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CHIEF ENGINEER required by Heavy Construction Company with Head Office Montreal. Candidates must be qualified Engineers with long successful experience on major civil engineering works with leading Canadian or U. S. Contractors. Able to take full control of contracts estimate to final account. Experience on marine works an advantage. Reply P-4294, Engineering News-Record.

CIVIL ENGINEER, young, with some construction experience, knowledge of soil mechanics and ground water flows desirable, salary commensurate with ability. Location Midwest. Reply in full to P-4279, Engineering News-Record.

CIVIL ENGINEER — Immediate Employment. Experienced in drainage design and water supply, road grades, general grading design; also in planning and laying out curvilinear roads for alignment and grade. Should have a good knowledge of survey work, and general site planning. Specifically needed, a man with broad experience in subdivision work or community planning of large residential projects, with a sound engineering background of training and experience. Good salary, bonus, liberal pension plan and very satisfactory working conditions. Housing arranged for. Project is building of community known as Levittown, Pennsylvania—a very genuine and interesting challenge in engineering, conceived by the nationally known builders Levitt & Sons, Inc. Send complete resume and details to C. A. Monroe, Chief Engineer, Levitt & Sons, Inc., Manhasset, New York.

DRAFTSMAN PARTY Chief—for Engineer—Land Surveyor. Must be either graduate or thoroughly familiar with topo mapping and general surveying. No drinkers. State age, education, experience, salary desired, when available. Reply P. O. Box 464, Bessemer, Alabama.

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ENGINEERS WANTED for Highway and Bridge Design work in Middle Atlantic State. Many permanent positions. Full information, references and salary requirements requested. P-4080, Engineering News-Record.

EXPERIENCED ENGINEER Wanted to take charge of field work large water plant project. Location Middle West. Apply in confidence giving salary desired, experience record, age and when available. P-4209, Engineering News-Record.

EXPERT QUANTITY Surveyors for earthwork, concrete masonry, lathing, plastering, carpentry. Individual above trades takeoff men will be considered also. Good hourly rates for home or part-time work N.Y.C. vicinity. P-4262, Engineering News-Record.

GENERAL SUPERINTENDENT — Marine and Heavy Construction. Permanent position. Location Southern New England. P-3974, Engineering News-Record.

ENGINEER-SUPERINTENDENT — Medium sized sewer, water, pump station, and disposal plant contractor in Northern New Jersey has an opening for an experienced construction man thoroughly familiar with all phases of construction work. Must be able to estimate (quantity take-off through completion of formal bid), to organize and run a job from start to completion, and to supervise routine office work. This is an unusual opportunity for the right man both as to starting salary and future opportunity.
P-4257, News-Record, 330 W 42 St., N. Y. 36, N. Y.

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HIGHWAY ENGINEERS — Principal Bridge Design Engineer, Design Engineers, Draftsman. Familiar with expressway work. Principal Engineer to take complete charge of bridge department. Furnish full information regarding education, experience, age, references and salary required. Replies confidential. Associated Consulting Engineers, 1606 Kelly Ave., Baltimore 9, Maryland.

MALE HELP Wanted: Estimator for building contractor. Excellent opportunity for top-notch man with young, aggressive company operating throughout the South. Write PO Box 1144, Montgomery, Alabama, giving full qualifications, including age, education, experience, availability, salary requirements and personal details.

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STRUCTURAL DESIGN Engineer. Must be experienced and capable of assuming design responsibility in steel and reinforced concrete for large commercial and industrial buildings. Real opportunity for right man with large Architect-Engineer office located in the Pacific Northwest. P-4131, Engineering News-Record.

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WANTED—DESIGN Engineer—to head Civil Section medium sized Architect-Engineer organization located central east coast city. Must be experienced in preparation site plans, drainage, paving design of roads, airfields, etc. Essential that applicant be able draftsman and capable of directing small squad. Give outline experience, when available and salary. P-4271, Engineering News-Record.

WANTED IMMEDIATELY—Civil Engineer experienced in computing property line data in engineering office, for old established firm, near New York City. Steady work for the right man guaranteed. Write full qualifications, age, references and salary requirements. P-4201, Engineering News-Record.

YOUNG MAN Some engineering background learn wellpoint work predraining wet foundations Good future supervision or sales midwest. Advise background and starting salary. Location Chicago. P-4280, Engineering News-Record.

WANTED: EXPERIENCED quantity survey man. Must be sober and reliable. Permanent position for right party. S. J. Curry & Company, General Contractors, Phone 3681 or P. O. Box 113, Albany, Georgia.

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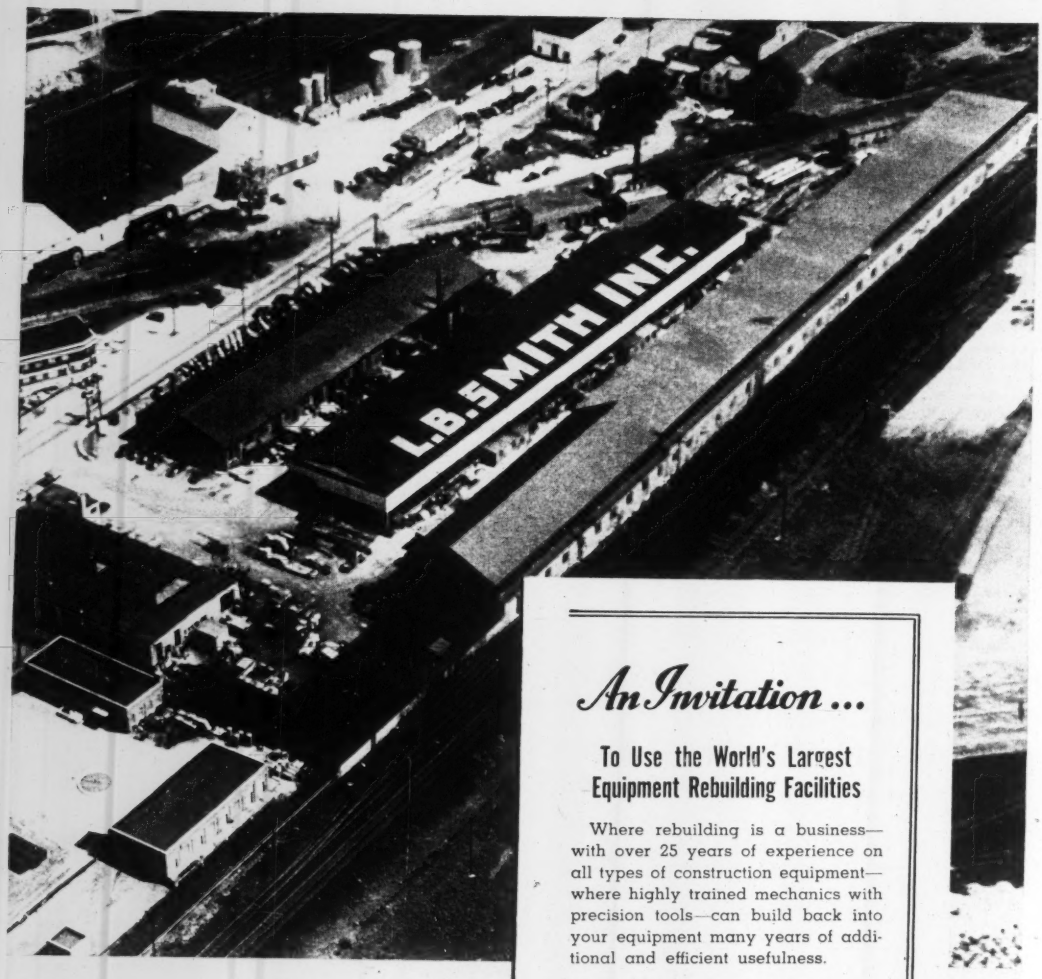

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New and Used Equipment News

Prepared Monthly by Ed Woolford at Camp Hill, Pa.

VOL. 1 NO. 2

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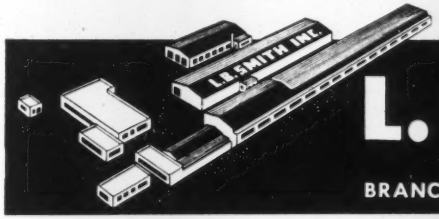

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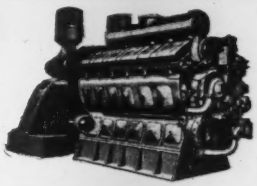

A PARTIAL LISTING OF OUR INVENTORY

KVA	Make	Mode	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	33F16	2000	300	375	Enterprise	DSG-6	450	450
1420	Fairbanks Morse	38D8¼	1600	720	330	Superior	KNA	398	514
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12¼x13T	750	600	125	Genera l Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6043C	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	UD-18	76	1200

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5" I x 40'— 8 H x 31 40'/48'
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8" I x 40'— 10 H x 49 40'/48'
12" I x 40'— 10 H x 54 40'/48'
8" C 11.5 x 40'— 10 H x 57 40'/48'
12" C 25 x 40'— 12 H x 53 40'/48'
15" C 33.9 x 40'— 12 H x 65 40'/48'
6 H 20 x 40'— 12 H x 74 40'/48'

Also Large Stock New & Used Wide Flange & Std. Beams, Angles, Reinforcing Bars

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Buc-Erie 51-B 2 yd. Diesel Shovel 1949.
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Koehring 605 1½ yd. Diesel Shovel.
Lima 1201 std. Diesel Shovel, 3½ yds.
Lima Pavmaster I yd. Diesel Shovel.
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Link-Belt K-595 Dragline, 2½ yds. Diesel.

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Koehring 304 20 tons cap. 80' bm. Excellent.
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General 307, 12 tons. Self propelled 60' Bm.
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Cummer 1500 lbs. Semi-Port. Very good.
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Rex 28-S Builders Mixer, Elec. New 1947.
Koehring 4 yd tilting mixer complete electric.

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Blaw-Knox and Heltzel 8100 ft. 9"x9": 10,000 ft. 8"x8" and 3000 ft 10"x8".

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596 CFM - 100# - 100 HP. Model 420 Base Mounted with 100 HP-G.E. Tri/Clad 3/60/220/440. Built-In Motors. Complete with self contained cooling system.

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3 yd Lima 1201 Dragline 120' bm. 1947
40 ton Orton Diesel Locomotive Crane
30 ton Ind. Brownhoist Gas Loco. Crane
Clyde 45 ton Elec. Gantry Crane new 1949
Manitowoc 2000 Crane 1½ yd 80 ft. bm.
65 ton Whitcomb Diesel Elec. Locomotive
8¼x10 Clyde 3 Drum Steam Hoist
Rex 200 Single Pumpcrete. Gas powered
Northwest 80D 2½ yd. Diesel Combination

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1 D8 Caterpillar Tractor, Serial No. 1H9970 with Caterpillar Winch and Model LeTourneau FP Scraper

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1 D8 Caterpillar Tractor, Serial No. 1H9975 with Caterpillar Winch and Model LeTourneau FP Scraper

1 D8 Caterpillar Tractor, Serial No. 8R20 with Caterpillar Winch and Model LeTourneau FP Scraper

1 D8 Caterpillar Tractor, Serial No. 8R28 with Caterpillar Pusher Block

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These tractors are in very good condition, most of them have recently had rails and rollers, sprockets and idlers put on and are now working

3 No. 12 Caterpillar Graders, Serial Nos. 9K4660, 9K4666, 9K4638

These graders are in excellent condition.

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Bound with Steel Strapping

1" x 2" x 12"	hundred	5.00
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Ask for prices on other sizes or large lots delivered.

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1 Clark Marine Diesel Engine, Model MD-4 350 H.P., 275 R.P.M., 4 cylinder, 2 cycle engine including some spare parts. Engine is new and has never been used.

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American Model 2036 steel stiffleg derrick. 30 tons at 48 ft. radius. 60 or 80 ft. boom. 36 ft. mast. 16 ft. bullwheel

130 HP Christian 2 drum and swinger diesel hoist. Buda 6 cylinder engine. 12,000 lbs. SLP at 200 FPM

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Plymouth Locomotive, gas 8 ton.

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35 ton cap., with 5 ton auxiliary

4 motors AC; 53' span; cab operated. Excellent operating condition. Priced quick disposal.

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25,000 ft.—5" Std. (5.563" O.D.) 14.8 lb.
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3—500 c.f.m. Ingersoll-Rand Portable Compressors
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1—Carr, Model A, Formgrader
2—Single Drum, 40 HP, Clyde Electric Hoists
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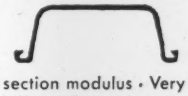

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Rex 34E double drum paver #GD229 with hydrocycle control, standard water storage tank, 35' distributing boom, controlled door bucket with 10' clearance at end of boom, powered by Waukesha Model 145GK 6 cylinder, 116 H.P. gasoline engine #720945, complete with auxiliary water pump $24,788.00

4700 ft. Heltzel steel road forms (500 — 10' long) with 3 wedged stake pockets and 1 V-type slide lock per 10' section (without stakes) ..... $1.60 per ft.

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5—1949 Ford dump trucks (F8) #98EQ25501; #98EQ24979; #98EQ27153; #98EQ27196; #98-EQ26185 ..... $1,500.00 ea.

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All Prices F.O.B. Our Yard
At BAILEY'S CROSSROADS, VIRGINIA
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Foreign Origin Rolled to Standard U.S. Size and Physical Specifications

Not Subject to NPA or CMP Limitations

6" H Beams 20#x40'	$5.95 Cwt. FOB Phila.
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8" I Beams 18.4#x40'	6.50 Cwt. FOB St. Louis
12" I Beams 31.8#x40'	6.50 Cwt. FOB St. Louis
¾"x20' .30-.50 Carbon HR Rounds	$5.50 Cwt. FOB Chicago
1"x20' HR Mild Rounds	5.50 Cwt. FOB Baltimore
1½"x20' HR Mild Rounds	5.50 Cwt. FOB Baltimore
1¼"x20' HR Mild Rounds	5.50 Cwt. FOB Chicago
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Bay City Model 30 dragline and backhoe. Rebuilt and guaranteed.

LeRoi 30 KW electric set. A real buy.

2—FWD Trucks with dump beds and Willets blades.

1—300 amp Lincoln welder.

Cat D17000 Electric Set. Excellent condition. Real saving on this set.

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FOR SALE

6 TD24 INTERNATIONAL Tractors, 1950 Model, with/without bulldozer blades.

1 BUCKEYE FINEGRADER, practically new.

2 SEAMAN PULVIMIXERS, 1949, self-propelled.

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2—Universal Jaw Crushers 10 x 36. Serials 27543 and 27549

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Above located in Wyoming

1—Universal Jaw Crusher 10 x 36. Serial 27521

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1—Bucyrus-Erie Crane 1¼ Yard. GA-3 Model. Serial 11643. Powered by Wisconsin Gasoline Motor Model D-2

Above located in Wisconsin

1—Koehring Dumptor Model W-55. Case Gasoline Power Unit

1—Lima Shovel 801. Serial SL-512. Buda Diesel Power Unit

1—Ingersoll-Rand Air Compressor. 315 C.F. Serial 40D-25126 with International Diesel Power Unit.

Above located in Alabama

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LIGHT BROWN (CORONADO TAN)

ENAMEL

REGULAR $30. VALUE

5 FULL GALLONS FOR ONLY $3.95

SHIPPING WEIGHT 68 LBS. F.O.B. PHILA.

A fine bodied, lusterless, enamel made to U.S. Air Corps Spec. #686—Class 20. For all wood and metal surfaces, protects against weather, rust and corrosion. For brush or spraying inside of outside, can be blended with other colors. Ideal for machinery, scrapers, cranes, trucks, tool sheds and outbuildings. Makes fine prime coat.

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1948 Insley ½ yd. Crawler Shovel Hoe
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New Wire Rope Blocks

18" Single 20 Ton with S. Shackle	$25.00
18" 3-Sheave 30 Ton with Shackle	50.00
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Reasonable

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Bids: May 27, 1952

Approach & Exit Lanes at Blue Mountain Service Station

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Harrisburg, Pennsylvania

Sealed proposals will be received by the Pennsylvania Turnpike Commission through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania until 10:00 A.M. (Eastern Daylight Saving Time), the 27th day of May 1952, and at that time and place will be publicly opened and read aloud for the following contract:

For construction of Approach and Exit Lanes at the Blue Mountain Service Station on the Pennsylvania Turnpike. This work is situated as follows:

Blue Mountain Service Station is located in Hopewell Township, Cumberland County, and adjacent to the Pennsylvania Turnpike.

The approximate quantities of the principal items are as follows:

Class 1 Excavation	7,400 Cu. Yds.
Subgrade	4,800 Cu. Yds.
6" Special Subgrade	4,800 Cu. Yds.
Reinforced Concrete Pavement	3,000 Sq. Yds.
Bituminous Surface Course, ID-2	10 Tons
Stabilized Shoulders	900 Lin. Ft.

Copies of plans, specifications and other contract documents are on file and open to public inspection at the offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on May 15, 1952. Copies of specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy.

Plans and contract documents, exclusive of specifications, may be obtained from the Commission upon deposit of ten ($10.00) dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans and contract documents returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in and to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
May 12, 1952

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 7030-253 being readvertised for furnishing labor and materials and performing all work for erecting prefabricated building for warehouse at Alcova Dam Government Community, Kendrick Project, Wyoming, will be mailed to P. O. Box 280, Casper, Wyoming, or delivered to the office of the Bureau of Reclamation in time for the public opening at 10:00 a.m., Mountain Standard Time, June 3, 1952, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming. Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and L. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $0.50 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

(Continued on page 116)

PROFESSIONAL SERVICES

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For Engineers and Architects.
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Consulting Engineer
Chairman of the Board,
Frederic R. Harris Inc.
Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Gas Plants
Phila.: Fidelity Phila. Trust Bldg.
New York: 27 William St.

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Engineering design and construction tests; run from MOBILE LABORATORY UNITS at construction site. Field load bearing tests.
193 West Shore Ave., Bogota, N. J.
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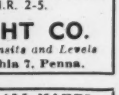

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OFFICIAL PROPOSALS

RATE: THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.50 PER LINE (OR FRACTION) PER INSERTION.

CLOSING DATE: FRIDAY 10:30 A. M. FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

SEND COPY TO: OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 36, N. Y.

(Continued from page 114)

Bids: June 3, 1952

Dow Pivot Valves

CONTRACT 434

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, June 3, 1952, for Contract 434, for furnishing, testing and delivering two 24-inch manually operated bronze Dow pivot valves, and pipe couplings, complete in every respect, for installation in the East Delaware intake chamber of the Delaware aqueduct, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of one thousand five hundred dollars ($1,500.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President. BUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD E. BURKE, Secretary.

Bids: June 4, 1952

Eldersburg-Louisville Road Bridge

CITY OF BALTIMORE
DEPARTMENT OF PUBLIC WORKS
BUREAU OF WATER SUPPLY

Sealed bids, or proposal, in duplicate, addressed to the Board of Estimates of the Mayor and City Council of Baltimore, and marked "Sealed Bid or Proposal for
Furnishing and Constructing
a Bridge in the
Patapsco Development
(Eldersburg-Louisville Road Bridge over
Morgan Run)"
will be received at the office of the Comptroller, Room 204, City Hall, Baltimore 2, Maryland, until but not after June 4, 1952, at eleven (11:00) o'clock A.M. (positively no bids will be received after 11:00 o'clock A.M.) Eastern Daylight Time, and at 12:00 o'clock noon on said date they will be publicly opened and read by the Board of Estimates in Room 231 in said City Hall.

The work to be done under this contract consists, in general, of furnishing all labor and material for and constructing complete a bridge consisting of deck truss main spans, composite wide flange beam end spans and concrete piers and abutments, to be known as the Eldersburg-Louisville Road Bridge over Morgan Run.

The site of the work is located approximately seven hundred feet downstream from the present Eldersburg-Louisville Road crossing of Morgan Run, which is approximately one and one-third mile south of Louisville in Carroll County.

The construction includes, but is not limited to, the following items:

Section A—Substructure
Excavation, approx., 730 cubic yards.
Concrete, approx., 462 cubic yards.
Portland Cement, approx., 750 barrels.
Reinforcing Steel, approx., 58,000 pounds.
Low Alloy Steel, approx., 10,800 pounds.
Steel Piles, approx., 930 linear feet.

Section B—Superstructure
Concrete, approx., 600 cubic yards.
Portland Cement, approx., 975 barrels.
Reinforcing Steel, approx., 108,000 pounds.
Fabricated Structural Steel, approx., 1,101,000 pounds.
Metal Railing, approx., 1,215 linear feet.
Bituminous Wearing Surface, approx., 209 tons.

Bids are asked for on the Substructure (Section A) and on the Superstructure (Section B) separately and combined.

Any bidder may bid on Section A or Section B or on both sections without bidding on the combined bid, but any bidder who bids on the combined bid shall also submit individual bids on Section A and Section B.

The "Bid Total" of the combined bid need not equal the sum of the "Bid Totals" of Sections A and B.

Bids when filed shall be irrevocable.

Specifications, proposal forms, drawings, and other contract documents may be obtained at the office of the Water Engineer, Room 503 Municipal Office Building, Baltimore 2, Maryland, on and after May 16, 1952. A charge of Ten Dollars ($10.00) will be made for each set of specifications, etc., and this amount will not be refunded.

Each bid or proposal must be accompanied by a certified check of the bidder drawn upon a solvent clearing-house bank, payable to the order of the Mayor and City Council of Baltimore. The amounts of the certified checks shall be as follows:

For a bid on Section A only	$1,500.00
For a bid on Section B only	$5,500.00
For bids on both sections only or For a combined bid	$7,000.00

The Board of Estimates reserves the right to reject any and all bids, and/or to waive technical defects if, in its judgment, the interests of the Mayor and City Council of Baltimore may so require.

Bond in the amount of the contract price will be required of the successful bidder.

Attention of the bidders is called to the minimum wage rates to be paid on this project.

APPROVED:
J. S. STROHMEYER
Water Engineer

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3718) will be received at Denver, Colorado, until June 12, 1952, for furnishing embedded metalwork for 40-foot by 24-foot radial gates for Central Valley Project, California. Delivery is desired within 300 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3720) will be received at Superior, Nebraska, until June 12, 1952, for furnishing labor and materials for earthwork and structures, Franklin canal, Station 0+42 to Station 750+00, and drains, Bostwick Division, Nebraska-Kansas, Missouri River Basin Project. Location: Vicinity of Napanee and Bloomington, Nebraska. Principal items are: 1,235,000 cu. yds. excavation; 2,900 cu. yds. concrete; 15,500 lin. ft. concrete pipe; 51,000 pounds metalwork; and other work. Completion time 600 days. For particulars, address Bureau of Reclamation, Superior, Nebraska, or Building 53, Denver Federal Center, Denver, Colorado.

Bids: June 3, 1952

Cellular Steel Subfloors for City-County Building

DETROIT-WAYNE JOINT BUILDING AUTHORITY

THE CONSTRUCTION OF THE STEEL FLOORS FOR THIS PROJECT HAS BEEN AUTHORIZED AND AN ALLOTMENT OF CONTROLLED MATERIALS AND RATING FOR OTHER MATERIALS AND EQUIPMENT APPROVED BY THE NATIONAL PRODUCTION AUTHORITY ON MAY 5, 1952.

The Detroit-Wayne Joint Building Authority will receive sealed proposals for furnishing and installing cellular steel subfloors for the City-County Building, to be located on the east side of Woodward Avenue north of Jefferson Avenue in Detroit, Michigan, until 2:00 PM, June 3, 1952. All proposals should be endorsed "Proposal for Contract CC-3, Cellular Steel Subfloors for the City-County Building" and addressed to the Detroit-Wayne Joint Building Authority, 404 County Building, Detroit 26, Michigan. Bids will be publicly opened and read aloud at the time above stated, in Room 422, County Building. Any proposals received after the above-mentioned time will be returned to the bidder unopened.

The accepted bidders will be required to furnish satisfactory performance and labor and material bonds.

The work consists of furnishing and installing all cellular steel subfloors for the City-County Building, including among other items either (1) a complete header system for an electrical and communication distribution system, or (2) a complete underfloor duct distribution system, for all locations where cellular steel floors are called for. The total area of steel subfloor ing required for the two units of the building will be about 500,000 sq. ft.

Caisson and substructure work at the site is well advanced, and the structural steel framing has been given an NPA allocation for the third and fourth quarters, 1952. Cellular steel subfloors are to be welded to the steel framing as soon as the latter is in place and approved.

The Contract Documents, including Notice to Bidders, Form of Proposal, Form of Contract Agreement, Drawings, and Specifications, may be examined and obtained at the offices of the Architects and Engineers, Harley, Ellington and Day, Inc., 153 East Elizabeth Street, Detroit 1, Michigan, during business hours. A deposit in the amount of $35.00 is required for each set of plans and specifications, to be refunded if plans and specifications are returned without marks or other mutilations within 10 days after receipt of bids.

Proposals must be submitted on forms furnished by the Architects and Engineers, and each must be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than 5 per cent of the total bid price as security for the acceptance of the Contract.

After the scheduled closing time for receipt of bids, no proposal may be withdrawn for at least 45 days.

The Detroit-Wayne Joint Building Authority reserves the right to waive any informality in any bid, or to accept any bid, or to reject any or all bids, should it be deemed for its best interests so to do.

The National Production Authority has allotted the following quantities of controlled materials for delivery in the quarters specified and assigned Allotment No. U-5:

Item No.	Controlled Materials	Unit of Measure	4th Quarter 1952	1st Quarter 1953
13	Structural Shapes	Tons	2.0	8.0
19	Other Carbon Steel	Tons	1.5	1.5

In addition, DO rating "DO-U-5" has been assigned for use of other building equipment and materials to the extent of $435,000,000.

DETROIT-WAYNE JOINT BUILDING AUTHORITY
ALBERT E. COBO, Chairman
CHARLES G. OAKMAN, Commissioner
JESSE ZIEGLER, Commissioner

(Continued on following pages)

OFFICIAL PROPOSALS

Bids: May 29, 1952

New York State Highway Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, Albany, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on Thursday, May 29, 1952 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2				
		LACY KETCHUM, Dist. Engr., 109 North Genesee St., Utica 1, New York				
Herkimer	M.T. 52-7 R.C. 52-37 S.T 52-11	N. Y. State Thruway—The Mohawk Sect. Subd. 10A Burch Creek—1 Mi. E. of East Schuyler; S. H. 459 East Schuyler-Deerfield; Co. Rds. 11, 53, 211 and access roads	6.51	9" Cem. Conc. 2 @ 25' Wide = 5.18 Mi. Asph. Conc. Ty. 1A Opt. = 1.33 Mi. H.G.S.I.B. (alpha) 2 Sp. 94' 5", 2 Sp. 64' 5½" I.B. (alpha) 78' 8¼" H.G.S.I.B. (alpha) 2 Sp. 86' 9¼" Ea. 2 Sp. 51' 8¼" Ea. H.G.S.I.B. Sp. 32' 3" H.G.S.I.B. Sp. 35' Twin Box Culv. 2 Sp. Each 13'	$200,000 Plans $50	$3,538,000
		DISTRICT No. 3				
		WILLIAM ROBINSON, Dist. Engr., Weigh Lock Building, Syracuse, New York				
Onondaga	M.T. 52-8 R.C. 52-38 S.T. 52-12	N. Y. State Thruway—The Mohawk Sect. Subd. 8B Brewerton Road-Madison Co. Line, S. H. 533 Fly Road; Freemont Rd.; Sheppe Corners Rd.; No. Manlius Rd.	1.83	9" Cem. Conc. 24' Wide = 0.36 Mi. Asph. Conc. Ty. 1A Opt = 1.47 Mi H.G.S.I.B. (alpha) 4 Sp. @ 73' 3", & 2 @ 37' 6" H.G.S.I.B. (alpha) 4 Sp. 4 Sp. 2 @ 74' 9", 2 @ 38' H.G.S.I.B. (alpha) 4 Sp. 2 @ 80', 2 @ 38' H.G.S.I.B. (alpha) 4 Sp. 2 @ 82' 8", 2 @ 43' 6"	$50,000 Plans $25	$924,000
		DISTRICT No. 4				
		J. P. LARSEN, Acting Dist. Engr., Barge Canal Terminal, Rochester, New York				
Genesee	OT 52-8	N. Y. State Thruway—The Ontario Section Subd. 1 & 2 Erie Co. Line-Slusser Rd. incl. Intersect with S. H. 5245 & Co. Rd. 4 & Pine Rd.	8.16	9" Cem. Conc. 2 @ 25' = 7.50 Mi. Grav. = 0.21 Mi. Misc. Work = 0.45 Mi.	$190,000 Plans $25	$3,490,000
Monroe	L.O.S.P. 52-2	Lake Ontario State Pkwy. Sec. C	1.56	Grading & Fdn. Crse. 3 Sp. I.B. (alpha) 50', 100', 50', Reinf. Conc. Slab. Sp. 30' 6" Twin Closed Box 2 Sp. @ 23' 11½"	$65,000 Plans $25	$1,199,000
		DISTRICT No. 7				
		R. F. HALL, Dist. Engr., 444 Van Duzee St., Watertown, New York				
Franklin & St. Lawrence	FASSH 52-5	Helena-Hogansburg, Pt. 1 & 2 Proj. S-3967(1)	4.41	Bit. Mac. Ty. 1 Pen. Method. 3 Sp. Timber Trestle 51' Total Span	$19,000 Plans $15	$345,000
		DISTRICT No. 8				
		J. S BIXBY, Dist. Engr., Pleasant Valley Road, Poughkeepsie, New York				
Westchester	H.T. 52-2	N. Y. State Thruway—Hudson Section Subd. 9B, Hudson River Bridge	0.42	Driving Piles, Const. of Cofferdams, Conc. Fdn. & Misc. Wk.	$120,000 Plans $10	$2,208,000
		DISTRICT No. 9				
		F. W. DONOVAN, Dist. Engr., 71 Frederick St., Binghamton, New York				
Broome	FAC 52-3 FASH 52-8	City of Binghamton Brandywine Ave. Ext. Brandywine Avenue Extension Proj. C-4968(8)	2.50	Asp. Con. Ty. 2A = 2.32 Mi. Misc. Work = 0.18 Mi. I.B. (alpha) Skew Sp. 55' 6"	$70,000 Plans $25	$1,381,000
Delaware	FARC 52-39	Deposit-Hales Eddy, S. H. 5045 Hales Eddy-Hancock S. H. 5167 Proj. F-336(12)	7.31	Cem. Conc. Pavt. = 7.11 Mi. Asp. Conc. Ty. 1A Opt. = 0.20 Mi.	$160,000 Plans $25	$3,014,000
Sullivan	FASS 52-5	Livingston Manor-Youngsville, Pt. 2 Proj. S-3171(1)	4.50	Bit. Tr. Stone = 4.48 Mi. Misc. Work = 0.02 Mi. 3-I.B. Brs. 42.4', 50' & 50'	$30,000 Plans $25	$575,000
		DISTRICT No. 10				
		J. J. DARCY, Dist. Engr., Montauk Highway at Little East Neck Rd., Babylon, New York				
Nassau	RCNSP 52-35	Northern State Parkway	10.02	Asp. Conc. Ty. 1A Opt. = 6.49 Mi. Roadside Improv. = 3.53 M.	$75,000 Plans $15	$1,284,000
Suffolk	FASS 52-2	Nesconsett-Port Jefferson Station Co. Rd. 80 (Int. Rds. 1.92) Proj. S-349(1)	7.64	Asp. Conc. Bit. Base = 7.54 Mi. Cem. Conc. Pavt. = 0.10 Mi. (Int. Rds. Asp. Conc. = 1.09 Mi.) Cem. Conc. 0.30 Mi., Asp. Tr. Earth = 9.53 Mi.)	$77,000 Plans $25	$1,408,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order if the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

OFFICIAL PROPOSALS

Bids: June 4, 1952

New Jersey State Hospital

Notice is hereby given that sealed proposals will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

General work, structural steel and miscellaneous iron, plumbing and drainage, heating and ventilating work, electrical work and elevator for Hospital Building for Senile Patients at the New Jersey State Hospital, at Trenton, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, W. State St., Trenton 7, New Jersey on Wednesday, June 4, 1952 at one (1:00) E.S.T. and will be opened and read immediately thereafter. Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, cash, in the amount of 5% of the bid or a bid bond in the amount of 5% of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for surety bond in the full amount of the contract, of a company authorized to do business in the State of New Jersey.

Plans and specifications, form of bid, contract and bond for the proposed work are on file and may be obtained upon application to the Director, Division of Purchase and Property, State House, Trenton, New Jersey on deposit of twenty-five dollars ($25.00) for each set; this amount to be refunded to the bidder upon receipt of same in good condition within 30 days after the award of the contract.

DEPARTMENT OF THE TREASURY
Division of Purchase and Property
Fred V. Ferber, Director.

Bids: June 17, 1952

Bronze Needle Valves

CONTRACT 411

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, June 17, 1952, for Contract 411, for furnishing, testing and delivering 36-inch and 24-inch bronze motor-operated needle valves and 12-inch bronze motor-operated needle valves with bronze air boxes, complete in every respect, for installation in the Neversink intake chamber of the Delaware aqueduct and in the release water chamber of the Downsville dam, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of eighteen thousand dollars ($18,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply.
RICHARD H. BURKE, Secretary

READ THE OFFICIAL PROPOSAL COLUMNS OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

PROCUREMENT DEPARTMENT, CITY OF PHILADELPHIA. Sealed proposals will be received in duplicate at Room 127, City Hall until 12:00 noon on Tuesday June 10, 1952, and opened at that time in Room 127, City Hall, for the Commissioners of Fairmount Park for ERECTION OF GALLERIES, SECTION 7, PHILADELPHIA MUSEUM OF ART ON THE BENJAMIN FRANKLIN PARKWAY, FAIRMOUNT PARK. Sealed proposals for the following Contracts: PART I GENERAL CONSTRUCTION WORK, PART II FANS AND VENTILATING DUCT SYSTEMS, PART III ELECTRICAL WORK, PART IV PLUMBING WORK. Copies of the specifications and drawings may be examined at Room 127, City Hall, and obtained upon the deposit of Ten Dollars ($10.00) in cash or certified check for each set. This sum will be refunded within ten (10) days after the date bids are received, provided said specifications and plans are returned in an undamaged condition. Procurement Commissioner reserves the right to reject any or all bids. Each bidder will be required to submit a sworn Questionnaire and Financial Statement. The form of contract and bonds may be obtained at Room 715, City Hall Annex.

CHARLES H. FRAZIER,
Commissioner

Bids: June 6, 1952

Furnish Seventeen—5KW, Gasoline Engine Driven, Portable Electric Power Plants

THE PORT OF NEW YORK AUTHORITY
PROPOSAL NO. 798

Sealed proposals for the furnishing of seventeen (17) 5 KW Gasoline Engine Driven, Portable Electric Power Plants, at various facilities in New York and New Jersey, will be received at the Office of the Director of Purchase of The Port of New York Authority, Room 1402, 111-8th Ave., New York 11, until 11:00 A.M. (EDST), Thursday, June 5, 1952, at which time and place proposals will be opened and read.
Contract documents may be obtained upon request at the office of the Director of Purchase.
THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, May 22, 1952

U. S. Government

Department of Commerce, Bureau of Public Roads, May 13, 1952. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T., JUNE 5, 1952, for the construction of Project 1AT-BS-C7, Suitland Parkway, District of Columbia and Prince Georges County, Maryland. From South Capitol Street Bridge to Silver Hill Road. Length 4.867 miles. The approximate quantities of the more important items are: 15,000 tons Crushed Gravel or Crushed Stone Base Course, 71,000 sq.yd. Reinforced Cement Concrete Pavement, and 54,400 lin. ft. Concrete Curb. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above. H. J. Spelman, Division Engineer.

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are MUST reading, each week, for contractors, engineering-construction companies, equipment and materials manufacturers, all over the United States.
. . . and used regularly for over 50 years by government, state, county and municipal departments for advertising bids.
Official Proposal Division
ENGINEERING NEWS-RECORD
New York City

BUSINESS AND FINANCE

Big builders gain most in shift to industrial

The big building contractor expanded his business in 1951, while the smaller building contractor lost ground. The primary reason for this was a record level of industrial activity for the defense program and a corresponding drop in private mass housing and commercial construction.

There were fewer contractors, big and small, in 1951, and fewer projects, but contracts were fatter in 1951 than in 1950.

This again was because of the shift to the industrial type of heavy construction.

Net result was that contracts for buildings of all types aggregated $6.2 billion in 1951, compared to $5.8 billion in 1950. The big contractors—those with contract awards of $1 million or more—accounted for all of the increase.

Million-dollar contractors stole the show in industrial construction in 1951, accounting for 97% of the total increase in industrial building. In fact, million-dollar contractors had industrial contracts totaling $3.1 billion. This was 94% of all the industrial building contracts received in 1951 by contractors who did $100,000 or more in volume.

This also represented a higher percentage of the industrial construction market than in 1950, when the million-dollar contractors came up with 89% of the volume.

In bidding for the remainder of the 1951 industrial building contracts, small contractors (those with $100,000 to $500,000 in 1951 contract awards, as reported by ENR) handled 706 projects, costing $113 million, edging out the medium-size contractors $500,000 to $1-million volume). The latter group handled 314 jobs for $95 million.

• **Non-defense work**—On the private mass housing, commercial and public building front, the smaller contractors did better. In this area, million-dollar firms had 1,617 projects for 78% of the 1951 dollar volume. Their total of $2.2 billion was 39% under the $3.7 billion registered in 1950.

Small contractors had the smallest relative drop in dollar volume and in number of projects. If you are a small contractor, your group's dollar volume declined to $296 million, 8% below 1950, while the number of projects your group handled went down 15% to 888.

If you are a medium-size contractor, your group did a little better than the small contractors in 1951, with a total of 675 projects, costing $350 million.

• **Public works**—If you were a million-dollar contractor in 1951—doing construction other-than-building, you took a larger share of the construction dollar last year than you did in the year 1950.

Small contractors performing this type of construction, which is almost exclusively public works, received a smaller share of the market in 1951 than in 1950.

Last year, in construction other-than-building, there were more million-dollar contractors and more medium-size contractors than in 1950. But there were fewer small contractors in existence.

Million-dollar firms numbered 851. This was 23% of the 3,636 contractors doing a contract volume of $100,000 or more last year. In 1950, there were 716 million-dollar contractors in this type of construction, and they represented 20% of the total.

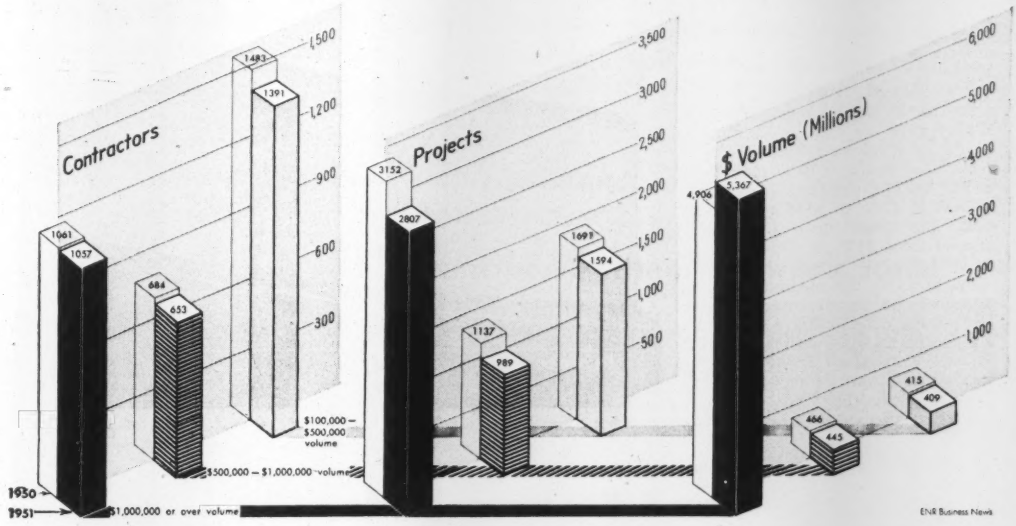
The million-dollar contractors were the only ones to handle more projects in 1951 than in 1950. Their 3,281 projects last year represented 39% of all other-than-building jobs, while in 1950, they handled only 35%.

Total dollar volume by the million-dollar contractors rose to $2.4 billion in 1951, 71% of the other-than-building total, compared to $2.2 billion in 1950.

Big contractors profited from the boom in federal airport construction last year, getting $573 million in new contracts, as against only $70 million in 1950.

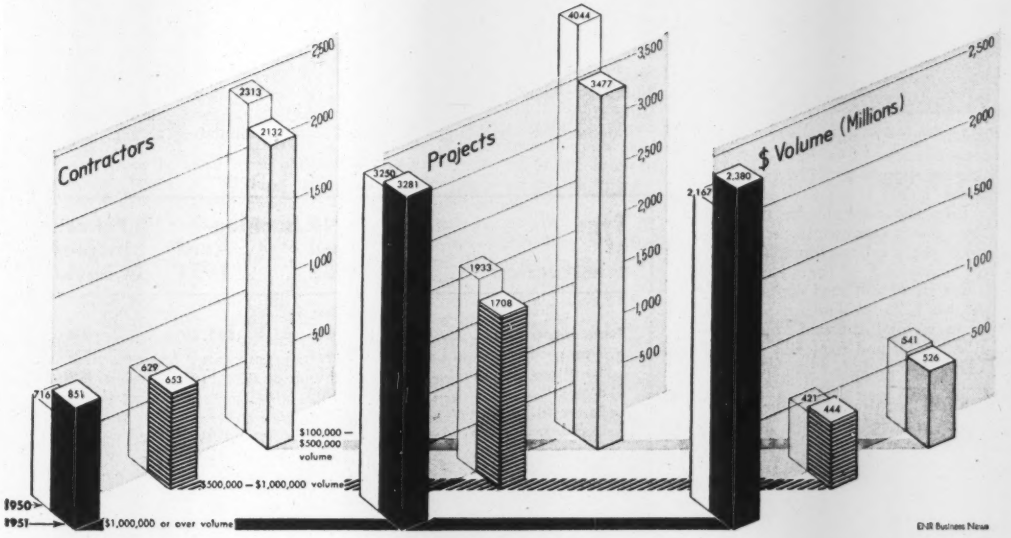
Million-dollar contractors also jumped their contract award totals in earthwork and waterways construction to $477 million last year, compared to $294 million in 1950.

• **Some categories down**—At the same time, these million-dollar contractors had substantially lower volume for streets and roads, and unclassified construction. Their dollar volume for streets and roads dropped to $522 million in 1951, compared to $645



Building Construction . . .

MILLION-DOLLAR CONTRACTORS took the spotlight in building construction in 1951. Key to their higher volume was the boom in industrial expansion.



Other Construction . . .

WHILE SMALL CONTRACTORS were losing ground, larger contractors increased their contract volume for construction other-than-building last year. The million-dollar contractors scored their biggest public works gain in federal airport construction.

million in 1950. An even bigger drop came in unclassified work handled by the million-dollar contractors. In this category, awards tumbled from $699 million in 1950 to $347 million in 1951.

Medium-size contractors doing other-than-building construction also showed gains last year. In addition to having a few more contractors in their ranks, they managed to increase their dollar volume slightly, from $421 million in 1950 to $444 million last year. But their share of projects slipped from 21% in 1950 to 20% in 1951.

As in 1950, the medium-size contractors turned up most often in street and road construction. Contracts amounting to $204 million for that type of work made up 46% of the medium-size contractors' total dollar volume, while the 906 projects involved represented 53% of all their jobs.

Medium-size contractors also profited from the big federal airport program in 1951. The number of contractors, projects and dollar volume for this type of work was two to three times what it was in 1950, but even at that, medium-size contractors, with $47 million, accounted for only about 11% of airport contracts.

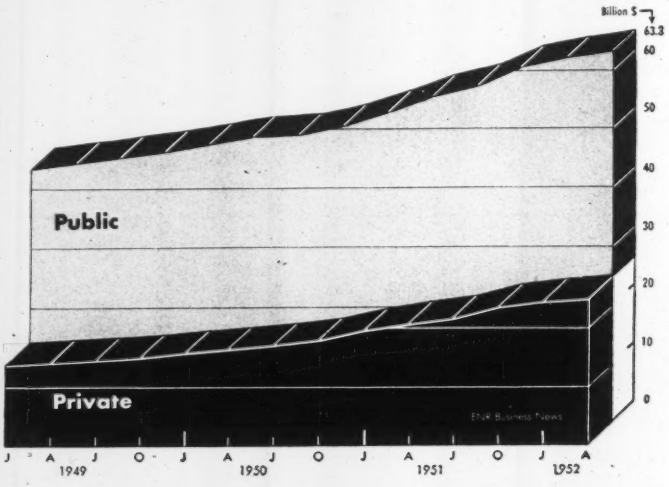
In construction other than building, small contracts played a smaller role in 1951 than in 1950 from the standpoint of number of contractors, number of projects and total dollar volume.

The number of small contractors in this category declined from 2,313 in 1950 to 2,132 last year. Projects added up to only 3,477 last year, compared to 4,044 in 1950. Dollar volume slipped to $526 million, just under 1950.

Like the medium-size contractors, the small contractors relied upon street and road construction contracts for nearly half of their total volume. Their street and road contracts added up to $225 million in 1951—43% of their total contract volume. The 1,526 street and road jobs handled in 1951 represented 44% of all their projects.

Small contractors boosted their dollar volume for both airport and sewer construction in 1951. Airport construction was the one type of work requiring more small contractors in 1951 to handle a larger number of jobs. Small contractors did the same dollar volume in airport construction as the medium-size contractors—47 million.

The increase in sewerage construction volume was small and was accomplished with fewer contractors.



ENR's backlog hits $63.3 billion

ENGINEERING NEWS-RECORD's Backlog of Heavy Construction stood at $63.3 billion at the end of April, 13.5% higher than a year ago.

Most of the gain was in private construction which climbed to $24.3 billion in proposed work, 20% more than April, 1951.

Principal reason for this large gain was the high volume of industrial building which went into the planning stage.

Commercial building, including private mass housing, also helped the backlog of private work grow but its effect was overshadowed by the $2.1 billion in new industrial projects piled into the backlog over the 12 months period.

Commercial and mass housing contributed only $1.4 billion over the same period.

During 1952, the backlog of new industrial projects has leveled off, while commercial and housing projects are accumulating at a faster rate.

Type of construction	ENR backlog— April 1952	April 1951	Per cent increase in backlog
	(million $)		
Public works	**$39,016**	**$35,591**	**9.6**
Waterworks	1,436	1,389	3.4
Sewerage	2,412	2,231	8.1
Bridges*	2,008	1,874	7.2
Earthwork, waterways	7,386	7,330	0.1
Streets and roads	5,322	4,746	12.1
Buildings	13,806	12,597	9.6
Unclassfiied	6,645	5,424	22.5
Private construction	**$24,277**	**$20,169**	**20.4**
mass housing	8,574	7,189	19.3
Commercial buildings and mass housing	8,574	7,189	**19.3**
Unclassified	6,366	5,755	10.6
Total, public and private	**$63,293**	**$55,760**	**13.5**

* Includes private bridges: $47 million, 4/52; $43 million, 4/51

Of the $1.4 billion in commercial and private housing construction added to the backlog in the 12 months ended this April, about $0.6 billion, 42% was added in the first four months of this year.

Private unclassified construction is also building up in the backlog at a faster clip this year. This category has added nearly $100 million to its proposed work total since January 1.

In the area of public works, highway work is accumulating at a rapid pace; its backlog has grown $200 million since the start of the year.

Most of this increase was in New England, where Connecticut and Massachusetts each put about $100 million more of highway construction into the pile of proposed work. This increase reflected planning for thruways.

The backlog of public buildings leveled off in recent months, although $237 million in new projects were added this year, almost all of it in January.

Public unclassified construction was the only other type of public works to have a sizable increase in its backlog during 1952, as it rose by $138 million. Most of this increase was for projects in California.

More sewage, waterworks, and earthwork and waterways projects entered the backlog during the first four months of this year but as a whole the increases were relatively small.

Bridge construction was the only type of public works to have a smaller backlog in April than it did at the start of the year.

"Time Bank" solves problem of engineering work force

A businesslike answer to an old business bugaboo of consulting engineering organizations—the problem of continual expansion and construction of working force to meet fluctuating work loads—apparently has been found by A. M. Kinney, Inc., Cincinnati consulting engineers and architects.

The answer—so simple as to be startling—is embodied in what Kinney calls its "Time Bank" plan: in effect, a guaranteed annual wage for professional employees, with credit and pay for overtime.

• **Banks and bankbooks**—Here's how it works:

Each new Kinney employee in the professional class (below the rank of key or executive personnel) automatically becomes a member of the "Time Bank," and an account is opened in his name—complete with an account book to which the employee has ready access.

The employee is hired at a basic yearly salary, based on working an average 40-hour week throughout the year. Kinney's accounting staff figure that salary down to an hourly basis.

Each day, the employee fills out a time sheet. Any overtime work goes on the sheet, and is credited to his "account" in the time bank. The employee then has the right to "draw" on his time account (providing that his work is in such shape as to permit it) by taking time off from work at any convenient time—to work around his home, go fishing, or pursue any other interest. He is, say company officials, a free agent, taking off time for which he has worked.

On the other hand, if the company hits a slack period, a man may be given time off—but with full pay—for which his account is debited. Later overtime is then balanced against the debit.

On December 1 each year the bank is "closed." All accounts are totaled, and if a man has additional time to his credit (beyond what he's taken as time off) he gets a check for the full amount due (at straight time) figured at his annual pay for the period in which the time was accumulated.

If he winds up the year "owing" the company time, the "debt" is wiped off the books.

The plan has been in operation for nearly 15 years—and company officials are well pleased with its workings. (It has been approved by the Salary Stabilization Board.)

It has these advantages:

Professional employees (exempted from overtime payments under control rulings) have a means of getting compensation for their work; thus have no objections at all to doing overtime often necessary on rush engineering jobs; they feel far freer to make use of their time without being under obligation for it; the payments due them at the end of each year (normally 100 to 200 hours, in spite of time off) are a handy bit of cash for the holiday season.

The company actually figures it spends less on accounting by this method than if it were issuing overtime payments with weekly or biweekly paychecks;—since accounts are balanced and checks (with all necessary deductions) made out only once a year; gets far more willing work from its employees, and can maintain a steady, capable, known force at all times. The necessary time sheets would be kept in any case, since some of the charge to clients is based on time.

The only real penalty of the system would be on management—if it has not succeeded in fully utilizing its employees' time. "And that," says A. M. Kinney, "is a management worry."

• **Nothing small**—The time bank is the personal brainchild of A. M. Kinney, Sr., tall, quiet-spoken founder of the company that bears his name. It isn't the only one of many advantages (point-system bonus plan, for instance) offered to Kinney's 110 professional employees.

A. M. KINNEY—Overtime is money in the bank.

The company itself started with Mr. Kinney, (a Mechanical Engineering Graduate of Purdue University) and his partner, William D. Ehlers (a Civil Engineer), two other men and a girl in the year of 1929.

Within a year, Kinney had bought out Mr. Ehlers, and the firm name became A. M. Kinney, Inc. In 1945, certain of the staff members organized Process Research Inc.—a firm devoted to development of economics of industrial processes and the layout, planning and functional development of building projects and sites; and in 1950, the company entered a partnership with R. K. Dodson and C. T.

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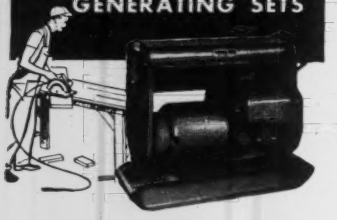

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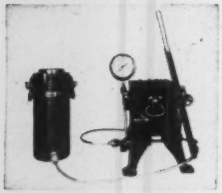

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Engineers relax bid bond rules

At the request of the Small Defense Plants Administration, the Army Corps of Engineers is changing its present practice of requiring bid and performance bonds for many of its supply contracts.

The change is expected to give small firms a better chance to bid on contracts for construction equipment, lumber and other items.

The practice of the Corps of Engineers has been to require bonds on all advertised supply contracts involving $100,000 or more, whether or not such bonds are actually needed. Most other military branches have no such policy.

The Corps of Engineers is now drafting instructions which will specify that bid and performance bonds on supply contracts will be required "only under special circumstances."

SDPA Administrator Telford Taylor said the change will also strengthen the congressional policy of providing financial assistance to contractors through government-guaranteed V-loans.

"Under V-loan procedures, loan guarantees are approved in cases where performance bonds are required only if the surety company agrees to subordinate its rights in favor of the V-loan guarantee," Taylor said.

"Since surety companies uniformly refuse to subordinate their rights," Taylor stated, "the result is that no V-loans can be made on contracts where performance bonds are required. The proposed modification of the Corps of Engineers' policy will therefore serve to make the V-loan guarantees authorized by Congress more generally available."

Taylor said he has also requested the Munitions Board to amend Section X of the Armed Services Procurement Regulation governing bid and performance bonds, since "The possibility exists that other procurement agencies may be following the same practice as the Corps of Engineers."

He reported that J. D. Small, chairman of the Munitions Board, has asked his staff to study the problem with a view of modification of the regulation.

TELFORD TAYLOR—A new rule solves an old problem.

Correction

Due to an error, Engineering News-Record reported in its issue of May 8, p. 115, that the ENR Construction Cost Index for May had risen 9.5%. This should have read 0.5%. Correspondingly, a 9.6% increase was reported in the ENR Building Cost Indexes. This should have read 0.6%.

Contractors win insurance fight

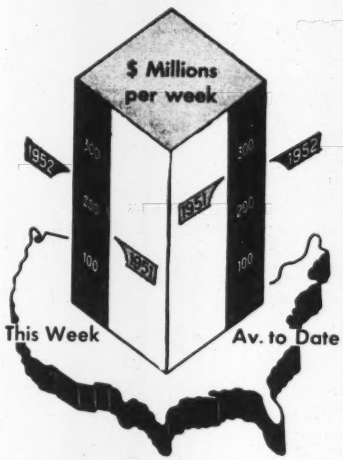
After an appeal by contractors and other groups, the Minnesota Supreme Court has ordered the State Compensation Insurance Board to reconsider its order raising the rate for workmen's compensation insurance by 8.2%.

The Supreme Court's strongly worded, unanimous opinion voiced dissatisfaction with the three-member board's methods of figuring the insurance rate and demanded that in the future full explanations accompany rate orders.

Issued Nov. 22, 1950, to apply to

all new and renewal compensation insurance written after Jan. 1, 1951, the board's order granted an increase in rates at a time when Minnesota employers contended a reduction should have been ordered.

• **Contractors appeal**—A lower court decision affirming the board's action was appealed to the State Supreme Court by the Minnesota Employers' Association, the Associated General Contractors of Minnesota and McCree & Co., of St. Paul. They charged that the rate increase order was "arbitrary, oppressive and unreasonable."



Activity This Week

As reported to ENR (in millions of dollars)

Contracts by type of work

	This Week	Cumulative 21 wks 1952	1951	% chge
Waterworks	$6.4	$98.6	$92.0	+7
Sewerage	2.6	89.1	133.8	−33
Bridges	4.8	144.7	118.0	+23
Highways	21.9	532.8	404.8	+32
Earthwork, waterways	7.3	235.8	218.7	+8
Buildings:				
Public	33.2	676.5	932.8	−27
Housg., pub.	2.7	395.9	224.6	+76
Housg., priv.	67.6	1,190.3	867.2	+37
Commercial	25.1	247.0	267.0	−7
Industrial	44.9	1,200.7	2,001.1	−40
Unclassified	21.4	522.9	622.1	−16
Total	**$237.9**	**$5,344.3**	**$5,882.1**	**−9**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes	Base Year = 100 1913	1926	1949
Constr. cost.	May '52 557.11	267.80	116.79
	Apr. '52 554.12	266.36	116.16
Bldg. cost.	May '52 410.36	221.83	116.65
	Apr. '52 407.94	220.52	115.96
Volume	Apr. '52 568	231	164

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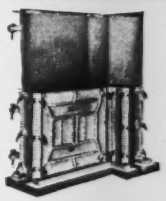

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UNIT PRICES

Highway projects, Ariz.

On bids opened April 15, 1952 by the Arizona State Highway Department five contractors competed for 8 miles of work on the Florence-Tucson Highway and four for 17 miles of work on the Topock-Kingman Highway. Bids on the Topock-Kingman Highway were within 2% of each other whereas on the Florence-Tucson bidding there was a 10% difference.

Work consists of furnishing and placing select material, aggregate base and bituminous road mix. Grading and draining are also included on the Florence-Tucson Highway.

The Topock-Kingman work must be complete October 31, 1952; and the Florence-Tucson, May 15, 1953. Bidders include:

Bidders include:

Topock-Kingman Highway

1C	Phoenix Tempe Stone Co., Phoenix	$455,404
2	Arizona Sand & Rock Co., Phoenix	460,040
4	Tiffany Construction Co., Phoenix	464,981

Bids: 4-15-52 Items	Unit	Quantity	Unit Prices 1 C	2
Structural excavation	cy	215	3 50	3 80
Reshape rd surface	mi	16 5	350 00	380 00
Watering	Mgal	7,500	3 50	2 74
Rolling	hr	2,000	7 00	8 40
Select material	t	95,800	0 75	0 72
Aggregate base	t	24,500	1 02	1 14
Cover mat seal coat	t	4,850	6 00	6 90
Bit mix cls 1-rd mix[1]	t	54,000	1 35	1 49
Liquid asphalt bit mix grd SC-3 or SC-4	t	2,325	34 00	33 00
Emulsified asph seal coat grd A	t	485	35 00	41 00
Conc, cls A inc. cmt	cy	46	100 00	92 00
CM pipe 8" CIP except exc. 18"	lf	736	2 75	3 50
Corr metal catch basin, std C-24, type A	ea	24	5 50	6 00
Plain riprap std C-23 type E	cy	30	15 00	14 00
Reconst cattle guard, std C-14 (2 unit)[2]	ea	30	30 00	50 00
(3 unit)[2]	ea	4	225 00	320 00
Road guard std C-7 & C-42	lf	3	250 00	440 00
Guide posts std C-8, type A, B, or C	ea	9,660	3 00	2 66
Line fence std. C-15 or C-16	lf	256	6 00	6 24
Stl fence gates std C-15 or 16	ea	319,200	0 22	0 21
Survey mon & cover std C-1	ea	58	55 00	40 00
		1	75 00	45.00

[1] CIP except cost of liquid asphalt
[2] Using salvaged grills, CIP except excavation & concrete

Florence-Tucson Highway

1C	Martin Constr Co., Tucson, Ariz	$737,025
2	Fisher Contracting Co., Phoenix	789,641
5	Western Constructors, Inc., Phoenix	810,750

Bids. 4-15-52 Items	Unit	Quantity	Unit Prices 1 C	2
Excavation, roadway	cy	4,800	$0 60	$0 50
drainage	cy	21,690	0 45	0 50
structural	cy	4,585	2 75	2 00
Borrow	cy	250,000	0 46	0 69
Watering	Mgal	13,875	1 75	3 00
Rolling	hr	3,800	7 00	8 50
Select material	t	72,000	0 65	0 68
Aggregate base	t	19,000	1 10	1 40
Cover mat seal coat type B	t	2,175	4 00	4 10
Bit mix cls 2-plant mix[1]	t	19,225	3 00	2 65
Liquid asph prime coat grd MC-1 or MC-2	t	360	38 50	37 00
bit mix grd SC-6	t	850	35 00	32 00
Emuls asph seal coat grd A	t	250	38 00	36 00
Structural steel handrail	lb	19,000	0 30	0 40
	lf	1,350	12 00	12 50
Conc, cls A-inc. cmt cls D	cy	2,513	50 00	44 00
	cy	1,207	52 00	49 00
Reinf steel (bars)	lb	515,500	0 12	0 12
C M Pipe, 18"[2]	lf	466	5 50	4 00
24"	lf	338	6 50	6 00
44" x 25" arch type	lf	70	10 00	12 00
Plain conc pipe, 18"[2]	lf	214	7 00	3 50
Reinf conc pipe, 24"[2]	lf	70	10 00	8 00
Conc test piles—stl shells or precast conc piles	lf	210	7.00	7.15
Conc piles—stl shells or precast conc piles	lf	4,650	4 25	4 60
Driv test piles	ea	6	150 00	155 00
Driv piles	ea	178	75 00	65 00
Fill pile shells—conc & reinf stl cast-in-place piles only	lf	4,860	2 00	1 80
Misc removal work	ls	1	$2,000	$2,500
Cattle guard, 1 unit[3]	ea	1	500	520
2 unit	ea	2	800	900
Road Guard, std C-7	lf	480	$4 00	$2 60
special	lf	640	4 00	4 25
Guide posts, std. C-8, tp B	ea	31	6.50	6.50
R/W markers, std. C-1 type B, C or E	ea	23	8.00	8.50
Line fence std.C-16	lf	44,500	0 25	0 20
Ind fence 6' std C-17	lf	450	6.50	2.00
Stl fence gate 16' std C-16	ea	12	48 00	40.00
Reconstr line fence	lf	5,650	0 22	0 20
wood fence	lf	120	1 00	0 65
Bank protect std C-23 type A	lf	390	12 00	12 00
Patch 4" conc canal lining	sf	690	0 50	0 80
Irrigation ditch 3' bottom	lf	5,550	0 50	0 13
2' bottom conc lines	lf	800	0 40	3 25
Irrigation struct, CIP inc exc pipe stubs & gates	ls	1	600.00	400.00

[1] CIP except cost of liquid asphalt
[2] CIP except excavation
[3] Std. C-14, CIP except excavation and concrete

Landscape work, N. J.

The 3-mile Palisades Interstate Parkway landscape improvement by the New Jersey State Highway Department brought close bidding. Saxe Contracting Company, of New York City, was only 1% below the second bidder with his successful bid of $63,645. R. J. Abbott is the state highway commissioner.

Minimum hourly wage rates for laborers in Bergen County are $2.20.

Work will begin in the fall and includes furnishing and planting 1,715 deciduous, evergreen and flowering trees, 6,646 shrubs and 782 vine and ground covers.

Bidders include:

Palisades Interstate Parkway

1C	Saxe Contracting Co., New York City	$63,645
2	Meadowbrook Nurseries, Norwood, N. J	64,544

Bids: 1-29-52 Items	Quantity	Unit Prices 1 C	2
American sweetgum, 2"-2½"–12"-14"	26	$44 40	$55.00
Eastern red oak, 4'-5'	22	5 55	4 50
2"-2½"-12"-14"	74	46 62	55 00
3"-3½"-14"-16"	8	83 25	65 00
Scarlet oak, 2"-2½"-12"-14"	12	46 62	55.00
Pine oak, 2"-2½" 12"-14"	27	44 40	55.00
Eastern White Pine, 6'-8'	57	27 75	25.00
Canada hemlock, 4'-5'	371	11 10	20.00
6'-8'	93	27 75	30.00
Shadblow serviceberry, 4'-5', clumps	70	5 55	10 00
Gray birch, 5'-6', clumps	62	11.10	7 50
Flowering dogwood, 4'-5'	392	8 88	10 00
6'-8'	51	22 20	15 00
Cockspur hawthorn, 6'-8'	300	22 20	8 50
Washington hawthorn, 8'-10'	150	33 30	30.00
Summersweet clothra, 2'-2½"	42	2 22	2.00
Sweetfern, 12"-15"	223	2 22	3.00
Common witchhazel, 3'-4'	50	33 33	30.00
Mountain laurel kalmia, 18"-24"	2133	3 88	3 50
Glossy buckthorn, 3'-4'	15	3 33	2.50
Catawba rhododendron, 2½'-3'	30	11 10	8.00
Pinxterbloom azalia, 18"-24"	380	4 44	5 00
Japanese rose, 2'-3'	100	2 22	2.00
Prairie rose 2'-3'	200	2 22	2.00
Virginia rose, 2'-3'	200	2 22	2.00
Highbush blueberry, 1½'-2'	931	3 88	4.00
Arrowwood viburnum, 2'-3'	1355	2 22	3.00
Blackhaw viburnum, 3'-4'	277	3 33	4.00
American cranberry bush, 2'-3'	710	2 78	3.00
Amur ampelopsis, 2 yr. #1	16	1 11	1.00
Oriental bittersweet, 2 yr #1	273	2 22	1.00
Sweetautumn clematis, clumps, 2 yr	32	2 22	1.00
Hayscentedfern, clumps, 8-12 eyes	300	1 66	1.00
Virginia creeper, 2 yrs #1	161	1 11	1.00
Topsoil, cy	1450	4 44	5.00
Manure, Tons	40	16 65	15.00
Peat humus, tons	30	22 20	18.00

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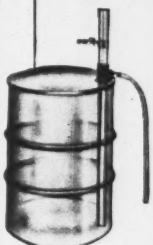

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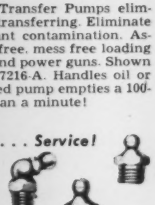

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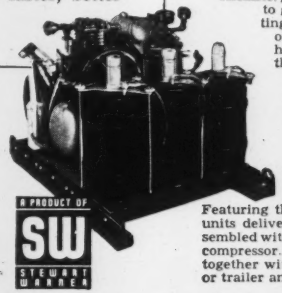

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.
ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—BUILDINGS

Conn., Farmington—SCHOOL ALTERATIONS—B.A. 6/4—ei Town Bd. Educ., high school alterations Unionville. $900,000. Plans deposit $50. CD 8/23.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Westover Development Corp.**, 97A Exchange St., Portland, Me. Owner Builds. $1,000,000. 1 story, frame HOUSES, BRUNSWICK, ME. Prentice & Carlisle Co., Inc., 12 Hammond St., Bangor, Me., archt.

Gil Wyner Co., Inc., 12 Newland St., Malden, Mass., LB $789,123, HOUSING, Proj., N.H. 3-1, Toland and Whittier Sts., DOVER, N. H. Dover Housing Auth., Dover, N. H. Bids May 6. CD 4/8.

▲ **Chiarello Bros.**, 393 Boston Post Rd., Greenwich, Conn. CA $1,198,775. Proj. Conn. 19-1 Federal Low Rent HOUSING, GREENWICH, CONN. Greenwich Housing Auth., Greenwich, Conn. Bids Mar. 10 awarded. May 6. CD 3/31, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲† **N. J., Fort Dix**—B.A. 6/13—Dpt. Army, 121 N. Broad St., Phila., Pa., water distr. system, sanitary sewerage system, storm sewers, underground steam distr. sys., aerial electrical distr. and street lighting system, paving, $2,800,000. Frank Grad & Son, 11 Commerce St., Newark, archts.

BIDS ASKED—BUILDINGS

▲ **N. J., Vineland**—SCHOOL—B.A. 6/2—Vineland-Landis Twp. Bd. Educ., Vineland, Junior High School $1,000,000. Hacker & Hacker, Fort Lee Trust Co. Bldg., Fort Lee, archts. CD 11/16/45.

Pa., Phila.—CHURCH—B.A. 6/3—Corpus Christi Roman Catholic Church, 29 St. and Allegheny Ave., superstructure for church. $500,000. Gleeson & Mulrooney, Fox Bldg., archts.

Pa., Norristown—NURSES RESIDENCE—B.A. 6/5—Montgomery Hospital, Norristown, nurses residences, boiler house. $900,000. The Ballinger Co., 121 N. Broad St., Phila., archts. CD 7/23.

▲† **N. J., Fort Dix**—POST HEADQUARTERS, etc.—B.A. 6/13—Dpt. Army, 121 N. Broad St., Phila., Pa., post headquarters and administration bldg., fire station, various other buildings, utilities and site imprvs., $3,300,000. Frank Grad & Son, 11 Commerce St., Newark, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York, 17, N. Y., CA, $3,331,987, superstructure for Newark Airport Passenger TERMINAL, NA 170.035, NEWARK, N. J. Port of New York Auth., 111 8th Ave., New York, N. Y. Bids Apr. 24. CD 5/5, under LB.

▲ **Booth & Flinn**, 1942 Forbes St., Pittsburgh, Pa. LB $1,318,924, est. $1,400,000. Liberty Road Bridge over North Branch of Patapsco River, BALTIMORE MD. City Bureau Water Supply, 503 Municipal Bldg., Baltimore, Md. Bids May 7. CD 4/21.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hartwell Homes**, c/o Matern & York, archts., 90-04 161 St., Jamaica, N. Y. Owner Builds. Approx. $2,000,000. 200 HOUSES on tract on St. Marks Ave. south of Casino St., FREEPORT, N. Y.

▲ **Rockwood Park Homes**, c/o Alwyn Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. 200 HOUSES on tract at Cross Bay Blvd., Belt Parkway and 159 Ave. (second sect.), HOWARD BEACH, N. Y.

Lake Estates Homes, c/o Alwin Cassens, Jr., archt, 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. $900,000. 100 HOUSES on 50-acre tract on Rte. 59, MONSEY, N. Y.

▲ **H. R. H. Constr. Co.**, 9 E. 40 St., New York 17, N. Y. CA. Approx. $1,500,000. 6 story OUT PATIENT Bldg. E. 17 St., NEW YORK, N. Y. Beth Israel Hospital, Stuyvesant Park East and 17 St., New York 3, N. Y. CD 10/12/49.

▲ **Greenway-in-Syosset Homes**, c/o Matern & York, archts., 90-04 161 St., Jamaica, N. Y. Owner Builds. $3,000,000. 162 HOUSES on 50-acre tract in Cold Spring Rd., SYOSSET, N. Y.

▲ **Woodcliff Park Homes**, c/o J. Ilowite Realty Co., 32-02 38 Ave., Astoria, N. Y. Owner Builds. Approx. $2,300,000, 336 HOUSES on tract on Wantagh Ave. near Southern State Parkway, WANTAGH, N. Y.

▲ **Strausman Constr. Co.**, c/o Matern & York, archts., 90-04 161 St., Jamaica, N. Y. Owner Builds. $2,500,000. 125 HOUSES on 38-acre tract at Newbridge Ave. and Valentine Rd., WESTBURY, N. Y.

▲ **S. P. Lewis Constr. Co.**, c/o John W. Burton, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. $1,000,000. 80 HOUSES, Francis Lewis Blvd. between 163 and 166 Sts., WHITESTONE, N. Y.

▲ **Fred Brunetti**, c/o B. J. Bergton, 55 Cedar Lane, Teaneck, N. J., Owner Builds, $1,750,000. 173 HOUSES on tract at River and Richelt Rds., NEW MILFORD, N. J.

▲ **Robert Vor Gerbig**, 250 S. Quince St., Phila., Pa., Separate Contracts. Approx. $1,000,000. RESIDENTIAL development, Flourtown Rd., BARREN HILL, PA.

▲† **Irvin & Leighton**, Schaff Bldg., Phila., Pa., LB $1,881,200. Letterkenny Depot MAINTENANCE SHOP, paving, water mains, sewage pumping station, sanitary sewers, water and sewers, CHAMBERSBURG, PA. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids May 6. CD 4/30.

▲ **Baltimore Contractors, Inc.**, 711 S. Central Ave., Baltimore, Md., CA. $2,000,000. 1 story 90x650 ft., and 90x400 ft., brick, block, steel PLANT addn. YORK, Pa. S. Morgan Smith, 50 Lincoln St., York, Pa. Day & Zimmerman, 1700 Sansom St., Phila., Pa., archts.

▲ **William Bornstein & Son, Inc.**, 145 Kennedy St. N.W., Wash., D. C. CA $2,000,000, ten buildings, 210 APARTMENT units, East-West Highway, west of Future Columbia Blvd., SILVER SPRINGS, MD. Armstrong Apartments, Inc., 145 Kennedy St. N.W., Wash., D. C. CD 4/22.

▲ **Richard P. Imschweiler**, 9 N. Concord Ave., Havertown, Pa., Separate Contracts, $2,000,000, RESIDENTIAL DEVELOPMENT, 100 homes, NEWARK, DEL.

▲ **Chelsea Estates, Inc.**, New Castle, Del., Separate Contracts, $1,000,000, RESIDENTIAL DEVELOPMENT, New Castle Air Base, NEWCASTLE, DEL.

SOUTH

BIDS ASKED—BUILDINGS

▲ † **Ala., Anniston**—FACILITIES—B.A. 6/19—U. S. Eng., P. O. Box 1169, Mobile, Zone 7, misc. facilities at Anniston Ordnance Depot, Eng 01-076-52-77. Plans deposit $15. CD 9/28.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Williams Paving Co., Inc.**, 1269 E. Princess Anne Rd., Norfolk, Va., CA $2,808,084, parking aprons, taxiways, fuels storage and dispensing facilities, LANGLEY AIR FORCE BASE, VA. U. S. Eng., foot of Front St., Norfolk, Va. CD 3/18 under LB.

▲† **Conn Structors, Inc.**, Whitehead Bldg., Atlanta, Ga., CA. $1,313,013, supply office and warehouse and Bldgs. 77 and 149 extens., NOY 70638, CHERRY POINT, N. C. P. Wks. Office, Box 365, Naval Base, Charleston, S. C. Bids Apr. 23. CD 4/29 under LB.

▲† **Paul Smith Constr. Co.**, 3103 N. W. 20 St., Miami, Fla. CA, $1,231,902, bulkhead, finger piers, paving, electric and water utilities at Naval Air Station, NOY 70642, KEY WEST, FLA. Dpt. Navy, Officer in Charge of Construction, Box 465, Naval Base, S. C. Bids May 2, awarded May 9. CD 5/6, under LB.

▲ **Swilling & Boyd**, P. O. Box 569, Pineville, La. CA $979,000, water distr. sys.;

Pittsburgh-Des Moines Steel Co., Praetorian Bldg., Dallas, Tex. CA $37,930. elevated storage tank, ALEXANDRIA, LA. Alexandria Area Water Dist. of Rapides Parish, Alexandria, La. Bids May 7. CD 4/29.

▲† **B. B. McCormick Constr. Co.**, Jacksonville Beach, Fla. CA $2,374,365. runway, taxiway, apron at outlying field NOY 282x84 MAYPORT, FLA. Dpt. Navy, Officer in Charge of Construction, Box 365, Naval Base, S. C. CD 5/6 under LB.

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

Farnsworth & Chambers Co., Inc., 3018 Leeland St., Houston, Tex. LB $4,228,031. S. Clairborne Ave. overpass incl. two 40 ft. roadways for vehicular traffic, pedestrian walkway, in New Orleans. Bids May 7. CD 4/16.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Virginia Engineering Co.**, Nelson Bldg., Newport News, Va. LB $857,000. bachelor officers QUARTERS, automotive shop, paved areas, etc., Eng. 44-110-52-32, FORT EUSTIS, VA. U. S. Eng., foot of Front St., Norfolk, Va. Bids May 8. CD 4/25.

Central Contg. Co., Shawnee Park, Louisville, Ky., LB $858,430. Defense HOUSING Proj. VA3D1, NORFOLK, VA. Housing & Home Finance Agency, 900 N. Lombardy St., Richmond, Va. Bids Apr. 30 (Correction—contractor). CD 5/9, under LB.

▲ **Florida Petro Chemical Corp.**, c/o Petrocarb Equip. Inc., engr., 30 Vesey St., New York, 7, N. Y., Seperate Contracts, $6,000,000, fuel gas and chemical PLANT near FORT LAUDERDALE, FLA.

▲† **Pittman Constr. Co.**, 2925 Franklin Ave., New Orleans, La. CA $2,398,977. 3 dehumidified WAREHOUSES, roads, railroads, utilities, NOY 70719, GULFPORT, MISS. Dpt. Navy, Officer in Charge of Constr., Box 365, Naval Base, Charleston, S. C. Bids May 1, awarded May 9. CD 5/7, under LB.

MIDDLE WEST

BUILDINGS

LOW BIDS AND CONTRACTS

Mississippi Valley Structural Steel Co., 25 and Norwood Sts., Melrose Park, Ill., CA. Approx. $600,000. 50,000 sq. ft. WAREHOUSE and OFFICE, 525 Township, ELMWOOD, O. Central Steel & Wire Co., 3000 W. 51 St., Chicago, Ill. Friedman, Schuler & Sincere, 223 W. Jackson Blvd., Chicago, Ill., engrs.-archts.

W. & B. Constr. Co., 2154 E. 22 St., Cleveland, O. CA $609,150. general contract 2 story, brick, stone elementary SCHOOL, Turney and Granger Rds., Garfield Heights, GARFIELD HEIGHTS, O. Bd. Educ., Turney Rd., Garfield Heights, O. Fulton, Krinsky & Dellamotte, 6014 Euclid Ave., Cleveland, O., archts. and engrs.

The Knowlton Constr. Co., 106 N. Main St., Bellefontaine, O., CA. $699,500. brick, concrete, steel HOSPITAL, PIQUA, O. Dettmar Hospital Assoc., Piqua, O. Awarded May 5. C 6/13/51.

L. J. Graf Constr. Co., 154 E. Erie St., Chicago, 11, Ill., CA, $650,000, CHURCH, CHICAGO, ILL. Our Lady of Victory Parish, 5212 Agatite St., Chicago, 30, Ill. Meyer & Cook, 1915 N. Lincoln St., Chicago, 41, Ill. archts. Awarded Apr. 30.

▲**Poirot Constr. Co.**, 2001 Pershing Rd., Chicago, 9, Ill., CA, $1,000,000, Tube WAREHOUSE and OFFICE, Kilbourn at Grace Sts., CHICAGO, ILL. General Electric Realty Corp., River Rd., Schenectady, N. Y. A Epstein & Sons Co., 2011 Pershing Rd., Chicago, 9, Ill., engr.

J. P. Cullen & Son, Jonesville, Wis. LB $748,216. general contract St. Mary's HOSPITAL addn., alterations, RHINELANDER, WIS. Sisters of Sorrowful Mother, Rhinelander, Wis. Bids May 6. CD 4/23.

▲ **Holtzman & Silverman**, 2120 National Bank Bldg., Detroit, Mich. Owner Builds. $2,500,000. 300 brick Sunningdale HOMES, Cherry Hill and Telegraph Rd. section, DEARBORN, MICH.

▲ **Rossin & Ringer**, 18685 Wyoming St., Detroit, Mich. Owner Builds. $4,000,000. 400 brick single HOUSES, Englehardt Ave., Mack Ave. section, DETROIT, MICH.

▲**Stieber Realty Co.**, 21999 Gratiot Ave., East Detroit, Mich. Owner Builds. $5,000,000. Rose Park Development, incl. 500 ranch brick HOMES, Eleven One Half Mile Rd., DETROIT, MICH.

▲† **Darin & Armstrong, Inc.**, 2041 Fenkell Ave., Detroit 4, Mich. CA $3,345,035. OFFICE and LABORATORY group, Detroit Arsenal, Center Line, DETROIT, MICH. U. S. Eng., 1900 Cadillac Tower, Detroit 26, Mich. Bids Apr. 30. CD 3/14.

▲**Bryant & Detwiler Co.**, 2304 Penobscot Bldg., Detroit, Mich. CA $15,000,000. 1,000,000 sq. ft. Northland SHOPPING CENTER, incl. 3 story Hudson Department Store, 6 buildings, 400 acres parking space, OAK PARK, MICH. J. L. Hudson Co., 1206 Woodward St., Detroit, Mich. CD 2/21.

▲ **Shelden Land Co.**, 32121 Plymouth St., Plymouth, Mich. Owner Builds. $1,500,000. 150 single brick frame HOMES, Plymouth and Farmington Rds., PLYMOUTH, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—BUILDINGS

Minn., Minneapolis—LABORATORY—B.A. 5/27—Bd. Regents, University of Minn., C. A. Smith, acting purch. agt., 323 Admin. Bldg., Main Campus, medical research laboratories. $650,000. Extended date. C. H. Johnston, 715 Empire Bank Bldg., St. Paul, archt. CD 5/7.

SOON LETS CONTRACT—HEAVY CONSTRUCTION

Nebraska—RURAL DISTRIBUTION LINES—Cherry-Todd Electric Co-operative, Valentine, soon lets contract 410 mi. rural distr. lines, $500,000, Flahart & Colgan, Rapid City, S. D., engrs. CD 4/30.

SOON LETS CONTRACT—BUILDINGS

Minn., Northfield—CHAPEL—St. Olaf College, C. M. Granskou, pres., Northfield, soon lets contract 1 story,

72x170 ft. stone chapel and offices, $500,000. Extended date. Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, archts. CD 5/7.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,

A. L. Alley & Sons, Faribault, Minn. and **Fischer Constr. Co.**, Farmington, Minn. LB $1,081,231. grav. base road-mixed bit. surf. and bridge 13.6 mi. between Lake City and Red Wing, Goodhue Co.;

Woodrich Constr. Co., Hopkins, Minn. LB $889,516. 16.5 mi. between Mapleton and Wells, Blue Earth and Faribault Counties;

Alexander Constr. Co., 4614 Hiawatha Ave., Minneapolis, Minn. LB $784,718. conc. base grav. base plant-mixed bit. surf. 8.1 mi. between North Jct. TH 169 in St. Louis Park and Jct. TH 52 in Robbinsdale and at intersection of TH 100 TH 169 and 50 St. in Edina, Hennepin Co.;

Fielding & Shepley, 1258 Bohn Ave., St. Paul, Minn. LB $660,699. paving 14 mi. between Cambridge and 3.5 mi. south of north Anoka Co. line, Anoka and Kanabec Counties. Bids May 9. CD 4/24.

▲ **MISSOURI**—State Hy. Comm., Jefferson City,

Fruin-Colnon Contg. Co., 1706 Olive St., St. Louis, Mo. LB $509,057, 33 rein.-con. bents on steel piling, St. Louis City; LB $550,641, 31 rein.-con. bents on steel piling, St. Louis City. Bids May 9. CD 4/25.

▲† **U. S. Eng.**, 601 Davidson Bldg., Kansas City 8, Mo. rejected bids Feb. 14, runways, taxiways, aprons, Grandview Air Force Base, Eng. 23-028-52-24, GRANDVIEW, MO. CA $1,430,062. (Correction—status). CD 4/30, under CA.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Peter Kiewit Sons Co.**, 1024 Omaha Natl. Bank Bldg., Omaha, Neb., LB $4,145,205, general constr.;

B. Grunwald, Inc., 1110 Farnam St., Omaha, Neb., LB $723,112, mechanical work.

Evans Electrical Constr. Co., 1617 Cuming St., Omaha, Neb., LB $519,592, electrical work for Municipal AUDITORIUM, OMAHA, NEB. City, City Hall, 18 and Farnam Sts., Omaha, Neb. Bids May 12. CD 4/23.

▲ **John H. Putney**, 133 N.W. Second St., Oklahoma City 2, Okla. CA $1,015,000, est. $1,000,000. EDUCATIONAL BLDG., 11 and Harvey Sts., OKLAHOMA CITY, OKLA. First Baptist Church, 1201 N. Robinson St., Oklahoma City, Okla. Awarded May 12. CD 1/23.

▲ **C. R. Jo Hansen**, 3848 S. Madison St., Tulsa, Okla., CA $1,500,000. 64 masonry HOUSES, TULSA, OKLA.

▲ **Thomas S. Byrnes, Inc.**, Continental Life Bldg., Fort Worth, Tex. Est. $18,000,000. 1,250,000 ft. dual purpose plant for output of automobiles and Grumman-designed aircraft for the Navy, ARLINGTON, TEX. Buick-Olds-Pontiac Assembly Div. of General Motors, General Motors Bldg., Detroit, Mich. CD 4/30.

▲ **Gasoline Plant Constr. Co.**, N. Esperson Bldg., Houston, Tex. CA $3,000,000. Gasoline Production PLANT, 10 mi. northeast of Bronte and 10 mi. west of Winters, BRONTE, TEX. Lone Star Producing Co., 1915 Wood St., Dallas, Tex. CD 4/16, under CA.

▲ **Laredo Homes, Inc.**, c/o Quincy Lee, 211 W. Olmos Dr., San Antonio, Tex. CA $1,125,000. 125 rental HOUSING units;

Williams-Dunlap & Clark, 7722 Eastern Ave., Dallas, Tex. CA $577,500. 77 rental HOUSING units, LAREDO, TEX. Federal Housing admin., 610 S. Flores St., San Antonio, Tex. Bids Apr. 23. CD 4/16.

H. E. White, 611 W. Elm St., Tyler, Tex. LB $673,400. 4 story, 83x129 ft., receiving and treatment bldg. at Rusk State HOSPITAL, RUSK, TEX. Bd. for Texas State Hospital and Schools, 45 and Lamar Sts., Austin, Tex. Bids May 9. CD 4/21.

† **Phil S. Hardy**, 205 City Hall, Texarkana, Tex., CA. $748,290. 2 BARRACKS at Red River Arsenal, Inv. No. ENG 34-066-52-51. TEXARKANA, TEX. 2 U. S. Eng. Box 61, Tulsa 2, Okla. Bids Apr. 15; awarded Apr. 23. CD 4/23, under LB.

Riedesle-Lowe Co., P. O. Box 914, Cheyenne, Wyo. LB $896,784. 222x265 ft. L-shaped Junior High SCHOOL, CASPER, WYO. Natrona County High School Dist., Independent School Dist. 2, Casper, Wyo. Bids May 7. CD 4/10.

▲† **Eagle Erection Co.**, Shoshoni, Wyo. CA $1,097,324. Pole Hill POWER PLANT and Flatiron POWER and PUMPING PLANT adjacent to Big Thompson River, near Loveland, Larimer Co., Spec. DC-3691, COLORADO. Bureau Reclamation, Dpt. Interior, Loveland, Colo. CD 5/8, under LB.

▲† **Olson Constr. Co.**, Railway Exchange Bldg., Denver, Colo. LB $1,638,310. 120 underground concrete IGLOOS with roadways, and aprons, Eng. 25-066-52-76, PUEBLO, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Prouty Brothers, Exchange Bldg., Denver, Colo., engrs. Bids May 9. CD 4/17

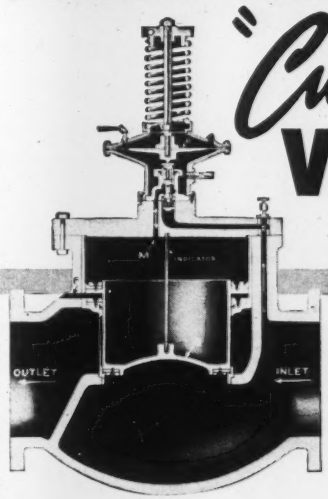
FAR WEST

BIDS ASKED—BUILDINGS

Calif., Los Angeles—PLANT—B.A. 6/2—B.F. Goodrich Co., 5400 E. Olympic Blvd., (selected list of bidders) 150,000 sq. ft. rubber mfg. plant addn. $704,000. H. E. Cook, 5500 E. Olympic Blvd., engr. CD 4/1.

▲ Wash., Seattle—HOSPITAL—B.A. 6/10—University of Washington, Seattle, Zone 5, 7 story, 80x260 ft., structural steel, rein.-conc. teaching hospital, $2,500,-

GOLDEN-ANDERSON "Cushioned" VALVES Automatically



G-A ALTITUDE CONTROL VALVE

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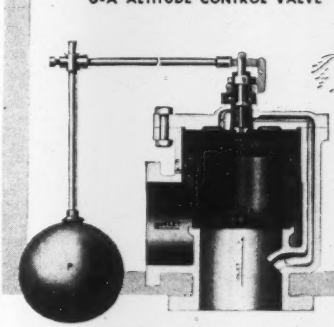

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Either of these two Golden-Anderson cushioned automatic valves will insure dependable high and low pressure water level control. The float valves were designed for use *in* tanks or reservoirs, while the altitude valves can be housed from inclement weather in a valve chamber at the base of the tank.

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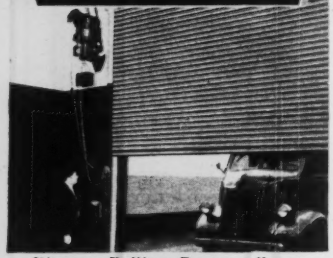

Kinnear Rolling Doors coil up and out of the way, clearing the entire opening, from jamb to jamb and floor to lintel! The rugged interlocking steel-slat curtain glides into instantaneous action with either manual or push-button control. Write now for all details.

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KINNEAR
ROLLING DOORS

000. Plans deposit $50 each for general, mechanical and wiring contracts, $35 for casework. Naramore, Bain, Brady & Johanson, 904 7 Ave., archts. CD 10/29/51.

▲† **Calif., Monterey**—SCHOOL FACILITIES—B.A. 6/11—Twelfth Naval Dist., Federal Office Bldg., San Francisco, construction of facilities for School of Engineering at Naval Post Graduate School, Spec. 32778. Plans deposit $200. CD 1/3.

† **Calif., Camp Pendleton**—B.A. 6/12—Dpt. Navy, San Diego, expansion field training facilities at Camp Horno Marine Barracks, 33 barracks bldgs., 3 mess halls, etc. $500,000. Plans deposit $170.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Allis-Chalmers Mfg Co.,** 1126 S. 70 St., Milwaukee, Wis., LB, $2,110,000, turbines;
Elliott Co., Ridgeway, Pa., LB, $1,874,644, generators;
Woodward Governor Co., 5001 N. 2 St., Rockford, Ill., LB, $136,975, governors;
General Electric Co., River Rd., Schenectady, N. Y. LB, $290,058, transformers, all for Box Canyon Dam, Newport, on Pend Oreille River, WASHINGTON. Pend Oreille Co. Public Utility Dist., Newport, Wash. CD 2/13/51.

† **Otis Williams & Co.,** Helena, Mont. LB, $581,333, est. $563,233. earthwork, pipe lines, structures, for Area W-8 laterals, sublaterals and westeways, West Canal laterals, Columbia Basin Proj. Spec. DC-3701, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids May 8. CD 4/30.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,
Ukropina, Polich & Kral, Box 425, Baldwin Park, Calif., LB, $1,003,903, superstructure for bridge across American River near Elvas, 1 mi. N.E. of Sacramento, Sacramento Co. Bids May 7. CD 4/15.
Johnston-Western Constructors, 2100 Wilmington-San Pedro Rd., San Pedro, Calif., CA, $677,400, construct quay wall at Berth 201, Pier A, LONG BEACH, CALIF. Long Beach Harbor Dpt., 1333 El Embarkadero, Long Beach, Calif. Bids May 1. CD 5/8, under LB.
Concrete Supply Co., P. O. Box 778, Merced, Calif. LB $513,219. Paving, storm drain, etc., street wid'n. Imprvt. Dist. 5, Proj. 42-1, MERCED, CALIF. City, City Hall, Merced Calif. Bids May 5. CD 4/2.
▲ **Guy F. Atkinson Co.,** 10 W. Orange Ave., South San Francisco, Calif., CA $1,433,130. Lexington Dam, near Los Gatos, SAN JOSE, CALIF. Santa Clara Valley Water Conservation Dist., 60 N. Second St., San Jose, Calif. Bids May 6. CD 4/25.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Robert E. McKee,** 4700 San Fernando Rd. West, Los Angeles, Calif., CA, $6,395,700. 5 general purpose WAREHOUSES at Utah General Depot, Eng 04-203-52-95, OGDEN, UTAH. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Apr. 22. CD 4/7.
MacDonald Eng. Co., 855 Bryant St., San Francisco, Calif. CA, $700,000 design and construct rice drying and storage facilities, BIGGS, CALIF. Rosenberg Bros., 230 California St., San Francisco, Calif. CD 5/1.
O. L. Carpenter, 1102 Morena Blvd., San Diego, Calif. CA $755,769. 1 story, frame, stucco ROANOKE SCHOOL, EL CAJON, CALIF. Cajon Valley Union School Dist., 570 E. Main St., El Cajon, Calif. Kistner, Curtis & Wright, Spreckles Bldg., San Diego, Calif. archts. Bids Apr. 3.
Ukropina-Polich-Krol, Box 425, Baldwin Park, Calif., LB, $616,549, POWER PLANT at Drop No. 2 Hydro-Plant, EL CENTRO, CALIF. Imperial Irrigation Dist., El Centro, Calif. Bids May 6. CD 5/27/49, under Earthwork, Waterways.
Graham & Jensen, P. O. Box 1208, Merced, Calif. LB $758,864. Jefferson Junior High SCHOOL, MADERA, CALIF. Madera Elementary School Dist., 725 E. 6 St., Madera, Calif. Bids May 5. CD 4/15.
Swinerton & Walberg, 225 Bush St., San Francisco, Calif., LB, $536,000, HOSPITAL facilities at Contra Costa County Hospital, MARTINEZ, CALIF. Contra Costa Co., Hall of Records, Martinez, Calif. Bids May 6. CD 4/9.
▲ **State Div. Architecture,** P. Wks. Bldg., Sacramento, Calif. rejected bids Apr. 22, Southern California RECEPTION CENTER and CLINIC Institution Bldgs. for Calif. Youth Auth., NORWALK, CALIF. LB, $1,106,-800. CD 5/2, under LB.
Howard J. White, 44 Encina Ave., Palo Alto, Calif., CA, $729,838, electronic PLANT, PALO ALTO, CALIF. Verian Assocs., c/o Eric Mendelsohn & Michael A. Gallis, archts., 672 Commercial St., San Francisco, Calif. Bids Apr. 15, awarded May 8. CD 3/28.
▲**Cahill Constr. Co.,** Inc., 206 Sansome St., San Francisco, Calif., CA, $1,611,769, general contract;
Herman Lawson Co., 465 Tehama St., San Francisco, Calif., CA, $565,769, mechanical work, for CLASS-Room and LIBRARY, City College of SAN FRANCISCO, CALIF. Dpt. P. Wks., City Hall, San Francisco, Calif. Bids Apr. 23, awarded May 7. CD 4/29, under LB.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Continental Steel Building Co.,** 837 N. Hollywood Way, Burbank, Calif., CA. Approx. $525,000. aircraft warmup shelters at Ladd and Elmendorf Air Force Bases, Inv. 52-2, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Mar. 12.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Reed & Martin,** Fairbanks, Alaska. LB $600,000, est. $550,000, rein.-con., steel, masonry elementary SCHOOL Proj. Aaa 50-A-59, FAIRBANKS, ALASKA. Alaska Dpt. P. Wks., Dpt. Interior, Juneau, Alaska. Bids May 7. CD 4/2.
▲ † **P. Wks. Office,** Seventh Naval Dist., Kodiak, Alaska, rejected bids Apr. 10, rein.-con. SCHOOL, two 2-story steel frame BARRACKS, 1 story rein.-con. ELECTRONICS BLDG., rein.-con. LAUNDRY addn., 17,000 ft. 18 in. c.i. water supply main at Naval Station, Spec. 31604, KODIAK, ALASKA, LB $2,878,-712. CD 4/23, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., North Bay—GARAGE—B.A. 5/27—R. P. Opie, engr. Defence Constr. Ltd., 441 Queen's Quay W., Toronto, 2B, Ont., standard M.E. garage bldg. Type A, and refueling tender garage at R.C.A.F. Station, Job 1966. Approx. $500,000. Plans deposit $100.
P. E. I., Summerside—GARAGE—B.A. 5/27—C. J. Connolly, engr. Defence Constr. Ltd., 1032 Gottingen St., Halifax, N. S., standard M.E. garage bldg. and refueling tender garage R.C.A.F. Station, $500,000. Plans deposit $100.
Ont., Trenton—GARAGE, etc.—B.A. 6/3—R. P. Opie, engr. Defence Constr. Ltd., 411 Queen's Quay W., Toronto, 2B Ont., standard ME garage Type A and refueling tender garage at R.C.A.F. Station, Job 1987, $500,000. Plans deposit $100. CD 1/10.
Que., Montreal—INSTITUTE WING—B.A. 5/27—Barott, Marshall, Montgomery & Merrett, archts., Canada Cement Bldg. 3 story, part bsmnt., cross-shaped, rein.-con. stone Allen Memorial Institute wing, for Royal Victoria Bd. Governors, Pine Ave. Approx $635,000. CD 4/12/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **ALBERTA**—Province of Alberta, Parliament Bldgs., Edmonton
Poole Engineering Co. Ltd., 10503 109 St., Edmonton, Alta., CA, $979,651, covering stabilized grav. base course on 29 mi. stretch of road east of Beiseker to Drumheller;
R. H. Smith, 10114 111 Ave., Edmonton, Alta., CA, $163,041 grading, other roadwork 15 mi. from Bashaw to north of Ferintosh;
National Paving Co. Ltd., Calgary, Alta., CA, $474,946 stabilized gravel base surf. course 0.78 mi. Castle River revision; 10.5 2 mi. Lumbreck to Belleview; 11.32 mi. Coleman to Crowsnest. Grand total $1,617,-638. Awarded May 7. CD 12/1/43.
▲ **Mannix Ltd.,** 100 Adelaide St. W., Toronto, Ont. and **Canadian Pipeline Constr. Co.,** 5340 1 St. S.W., Calgary, Alta., joint contractors and **Sparling-Davis Co. Ltd.,** 2049 Dundas St. West, Toronto, Ont., CA, Total $50,000,000, each will construct 1/3 of 400-mi. 10 in. pipe line, from Toronto, Ont. to Montreal, Que. ONTARIO and QUEBEC Trans-Northern Pipe Line Co. Ltd., 21 Dundas Square, Toronto, Ont. CD 9/28.
▲ **Campbell Bros. & Thompson Ltd.,** 65 Bois Franc Rd., Montreal, Que., CA, $1,000,000, road to service new copper mine at Needle Mountain, about 60 mi. to harbor facilities on St. Lawrence River, GASPE, QUE. Dpt. Mines, Quebec City, Que.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Smith Bros. & Wilson Ltd.,** 1267 Richards St., Vancouver, B. C., CA, $2,500,000, rein. con. PLANT, BURNABY, B. C. Continental Can Co. of Canada Ltd., c/o 1930 Marine Bldg., Vancouver, B. C. McCarter & Nairne, 1930 Marine Bldg., Vancouver, B. C., archts. Awarded May 8. CD 4/21, under CA.
Soules Constr. Co., Ltd., 880 Bay St., Toronto, Ont., CA $899,630, Royal York Rd. Secondary SCHOOL, Islington, TORONTO, ONT. Etobicoke Bd. Educ., Montgomery Rd., Islington, Ont. Bids Apr. 30, awarded May 8. CD 4/18.
▲ **Foundation Co. of Canada Ltd.,** 1900 Sherbrooke St. W., Montreal, Que., CA, $20,000,000, design and construct 6,000 ton daily capacity concentrator and smelter at Needle Mountain 60 mi. from Gaspe Village, GASPE, QUE. Gaspe Copper Mines Ltd., Royal Bank Bldg., Toronto, Ont.
Rene Lafleur, 2950 Barclay Ave., Montreal, Que., Owner Builds, $810,000, APARTMENT HOUSES, 6 blocks, 3 story bsmnt., concrete, brick, stone 13 suite each, MONTREAL, QUE. C. Grenier, 170 Geneva Crescent, Mount Royal, Que., archts.
▲ **T. C. Constr. Ltd.,** 9810 St. Denis St., Montreal, Que., Owner Builds. $1,000,000. HOUSING development, incl. 76 bungalows, Lackapelle and Ranger Sts., MONTREAL, QUE. P. Paquette, 3443 St. Denis St., Montreal, Que., archts.
Bird Constr. Co. Ltd., 7 7 St., Regina, Sask., CA $923,779, BARRACKS block for R.C.M.P., REGINA, SASK. Govt. of Canada, Dpt. Justice, Ottawa, Ont. Bids Apr. 30. CD 5/14, under LB.

(Proposal Advertisements see pp. 114, 116 to 118)

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Mass., Falmouth**—ATMOSPHERIC FINDING STATION—B.A. On Or About 5/28—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, atmospheric position finding station, Camp Edwards, Eng. 19-016-52-60. CD 12/6/51, under public bldgs.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Lawrence E. Wrinkle, 38 Lawnwood Ave., Longmeadow, Mass. LB $70,952, est. $70,500. bridge Main Rd., Montgomery. Bids May 6. CD 4/30.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

John P. Condon Corp., 105 Coolidge Hill Rd., Watertown, Mass. LB $87,632, est. $102,000. hy. work Lawrence Rd. and Summer St., Medford. Bids May 6. CD 4/30.

DiMascio Bros. & Co., 26 Everton St., Dorchester, Mass. CA $92,750, est. $100,000. sanitary sewer various locations, BRAINTREE, MASS. Town, Bd. Sewer Comn., Town Hall, Braintree, Mass. CD 4/11.

A. Piatelli, 56 Rockdale St., Mattapan, Mass. CA $243,570. Contr. 18, sewers, appurtenances, Central Main and South Weymouth Sewer, WEYMOUTH, MASS. Town, Bd. Sewer Comn., 402 Essex St., East Weymouth, Mass. Bids May 5. CD 4/25.

BUILDINGS

LOW BIDS AND CONTRACTS

Aquadro & Cerruti, Inc., Grove St., Northampton, Mass. CA, $494,951, est. $400,000. Leeds Elementary SCHOOL, Florence Sts., NORTHAMPTON, MASS. City Supt. Schools, High School, Northampton, Mass. Bids May 6. CD 4/15.

State Dpt. Mental Health, 15 Ashburton Pl., Boston, Mass., rejected bids Contr. 1 M-221, hospital Wrentham State School, WRENTHAM, MASS. LB $846,176. Will re-advertise. CD 4/17, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. Y., Astoria—B.A. 5/28—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Cont. 3, Long Island Intercepting Sewers, Bowery Bay Sewage Treatment Works extens., Queens Boro. Plans deposit $25. Extended date. CD 4/21.

BIDS ASKED—BUILDINGS

N. Y. New York—HOSPITAL—B.A. 5/28—Dpt. P. Wks., Municipal Bldg., Zone 7, Cont. 1, general const.; Cont. 2, plumbing; Cont. 3, heating, ventilating, air conditioning, sprinkler and refrigeration sys.; Cont. 4, electrical work and lighting fixtures for construction of the General Hospital and Superintendents' Houses and Garages at Pelham Parkway South and Eastchester Rd., Bronx Boro. Plans deposit $100. Extended date. CD 4/3.

▲ **N. Y., Brooklyn**—SCHOOL—B.A. 5/29—Bd. Educ., 49 Flatbush Ave. exten. Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for addn. to P. S. 16, Wilson St. between Bedford and Lee Aves. $1,022,200. Plans deposit $10 general constr., $6 each mechanical work. CD 5/8.

▲ **N. Y., Buffalo**—OIL PLANT and LABORATORY—Bids Asked—Archer Daniels Midland Co., Roanoke Bldg., Minneapolis, Minn. linseed oil plant and laboratory. $2,000,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Layne-New York Co., 92 Liberty St., New York 6, N. Y. LB $87,700, Contr. 3, wells and well pumps;

Auserehl & Son Contr. Corp., 9540 157 St., Jamaica, N. Y. LB $49,966, Contr. 4, well houses and appurtenances, GARDEN CITY, N. Y. Village at office Supt. P. Wks., Village Hall, 110 Seventh St., Garden City, N. Y. Bids May 5. CD 4/16.

Planet Constr. Corp., 11 W. 42 St., New York, N. Y. CA $796,300, construct airfield facilities, Suffolk Air Force Base, WESTHAMPTON, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. CD 3/6.

▲ **PENNSYLVANIA**—State Hy. & Bridge Auth., 506 N. Office Bldg., Harrisburg,

George Vang, Inc., Grant Bldg., Pittsburgh, Pa. LB $2,203,631. Construct 12,582 ft. c. conc. divided hy. and deck plate girder bridge over Youghiogheny River, Rte. T. R. 119, Connellsville By-Pass, Fayette Co. Bids May 9. CD 4/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Bonnie Crest Estates, Inc.**, c/o Henry H. Moger, Jr., archts., 250 Main St., White Plains, N. Y., Owner Builds. Approx. $2,500,000. 400 HOUSES on 140-acre tract at Victory Blvd. near Broadfield Rd., NEW ROCHELLE, N. Y.

Plandome Mills, Inc., c/o Edwin Kline, archt., 123 Middleneck Rd., Great Neck, N. Y. Owner Builds. Approx. $900,000. 20 HOUSES on tract on Plandome Rd., PLANDOME MILLS (P. O. Manhasset), N. Y.

▲ **United Engineers & Constructors, Inc.**, 1401 Arch St., Phila., Pa., CA. Approx. $6,000,000. 4 story brick, structural steel steam and gas turbine development LABORATORY at the South Philadelphia Works, PHILA., PA. Westinghouse Electric Corp., 401 Liberty Ave., Pittsburgh 30, Pa.

▲ **National Capital Housing Auth.**, 1728 L St. N.W., Wash., D.C., rejected bids Feb. 26, DC-1-17 Richards Dwelling HOUSING, WASH., D. C. LB $2,227,000, Alternate $2,197,000. CD 3/6, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Va., Portsmouth**—LEAN-TO—B.A. 5/27—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, lean-to for sub-station D-3 at the Norfolk Naval Shipyard, NOY 73557, Spec. 33695. Plans deposit $10.

† **N. C., Fayetteville**—B.A. 6/10—Veterans Admin., Vermont Ave. between H and I Sts. N. W. Wash. 25, D. C. paving roads and parking areas for Veterans Admin. Hospital, Proj. 4-4139, Spec. 5279.

S. C., Charleston—SEWAGE PUMPING FACILITIES—B. A. 6/10—Dpt. Navy, Officer in Charge of Construction, Box 365, Naval Base, sewage pumping facilities at Naval Minecraft Base, NOY 71567. Plans Deposit $10. CD 7/15/49.

BIDS ASKED—BUILDINGS

Ky., Shelbyville—HOSPITAL—B.A. 5/27—Kings Daughters Hospital, Shelbyville, hospital. $900,000. Nevin & Morgan, Starks Bldg., Louisville, archts. E. R. Ronald & Assoc., 554 S. Third St., Louisville, engrs.

† **Ga., Augusta**—BOILER PLANT ALTERATIONS—B.A. 6/17—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash., 25, D. C., boiler plant alterations Building 15, Veterans Administration Hospital Project 10-5149, Spec. 5266.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NORTH CAROLINA—State Hy. & P. Wks. Comn., Raleigh, rejected bids Apr. 29, STBC, bit. surf. tr. 5.5 mi. Proj. 6-112, S 576 (1), Chatham Co., LB $70,830. CD 5/5, under LB.

N. E. Brewer Co., Greensboro, N. C., LB $193,586. Alt. $183,326. WW imprvs., 23,000 lin. ft. 6 in. raw water line, valves, etc., THOMASVILLE, N. C. City, R. M. Cooksey, city mgr., Thomasville, N. C. Bids May 6. CD 4/23.

BUILDINGS

LOW BIDS AND CONTRACTS

Dewey G. Weddle & Co., Natl. Bank of Commerce Bldg., Norfolk, VA., LB $575,369. Defense HOUSING Proj. VA-4D1, NORFOLK, VA. Housing & Home Finance Agency, 900 N. Lombardy St., Richmond, Va.

▲ **George T. McLean**, High St. at Belt Line R. R., Portsmouth, Va., Owner Builds. $2,000,000. 300 HOUSING units, PORTSMOUTH, VA.

Little Const Co., 1205 E. Worthington Ave., Charlotte, N. C. LB $469,727. 50-bed HOSPITAL, JACKSONVILLE, N. C. Bd. Comrs. Onslow Co., Jacksonville, N. C. Bids May 6. CD 4/10.

▲ **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C. CA $50,000,000. PLANT to recover chemical from natural gas, NEW ORLEANS, LA. American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y. C 12/6/51.

Seth E. Giem Co., 801 Roland St., Memphis, Tenn. LB $449,000. Riverside HOSPITAL addn., alterations, PADUCAH, KY. City Comrs., Paducah, Ky. Bids May 6. CD 4/15.

MIDDLE WEST

BIDS ASKED—BUILDINGS

† **O., Toledo**—ARMORY, MOTOR VEHICLE SHED—B.A. 6/6—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., 2 story, 48x211 ft. with 1 story, 30x43 ft. masonry O.R.C Armory, 1 story concrete block motor vehicle shed bldg., either one bay approx. 25x55 ft., or three bay approx 50x70 ft. on campus of University of Toledo, W Bancroft St., Serial No. ENG 46-022-52-120. CD 4/16.

Ind., Columbus—SCHOOL—B.A. 6/9—Columbus Twp., C. N. Dinkins, trustee, two 2 story, part bsmnt., brick, steel grade schools. $65,000. Plans deposit $25. Norman H. Hill, Indiana Trust Bldg., Indianapolis, Zone 4, archt.

▲ **Ill., Chicago**—HOUSING—B.A. 6/13—Chicago Housing Auth., 608 S. Dearborn St., Chicago 5, Ill. 4 apartment bldgs., incl. 322 units, State St. and Cermak Rd. $3,250,000. Skidmore, Owings & Sincere, 100 W. Monroe St., Zone 3, archts. CD 2/2/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **WISCONSIN**—State Hy. Comn., Madison,

J. R. Griffith Co., 1500 9 St., Racine, Wis., LB $383,156, Contract 1, grading, draining, base course 1.756 mi. Hartland-Pewaukee-Milwaukee Rd. U.S. Hy. 16 and S.T. L90, F 06-1 (23), Waukesha Co.;

Bushman Constr. Co., 4638 J. C. Nichols Pkwy., Kansas City, Mo., LB $139,608, Contract 1, grading, draining ballast 3.436 mi. C.T.H. "D"—S.T.H. 23 Road, S.T. Hy. 73, Proj. S-0293 (4), Green Lake Co.;

Arthur J. Pagel, Almond, Wis., LB, $379,857, Contract 1, grading, draining, ballast and structures 5.993 mi. Seneca Corners-Wisconsin Rapids Road, S.T. Hy. 13 and 73, F04-4 (7), Wood Co.;

Stack Constr. Co., W. Burleigh St., Milwaukee, Wis., LB, $323,976, Contract 1, c. conc. 1.678 mi. West Layton Ave., U.S. H. 41-S.T. H. 38 Section, C.T. Hy. "V" Proj. AS 0830 (3), Milwaukee Co.;

James Cape & Sons Co., 468 Water St., Racine, Wis., LB, $149,169, Contract 1, c. conc. base and sheet asph. paving 0.501 mi. Fourth Ave. (City of West Bend), U.S. Hy. 45, Proj. U 3731 (3), Washington Co.;

Trierweiler Constr. Supply Co., Inc., Marshfield, Wis., LB, $87,435, Contract 1, c. conc. 0.36 mi. West Green Bay St. (City of Shawano, S.T. Hy. Proj. U 356. (3), Shawano Co.;

Vinton Constr. Co. & Wm. Vinton, Manitowoc, Wis., LB, $224,258, Contract 1, c. conc. 0.655 mi. Racine and Third St (City of Menasha) ad Third St. (City of Menasha) S.T. Hy. 114, Proj. U 560 (5) and U 5602 (1), Winnebago Co.;

Reliance Constr. Co., 1011 S. 8 St., Sheboygan, Wis., LB, $77,658, Contract 1, b. conc. 0.838 mi. Madison-Michigan-Third Avenue (City of Sturgeon Bay) S.T. Hys. 42 and 57, Proj. T 3641 (1), Door Co.;

J. W. Craig Co., 1814 N. E. California St., Minneapolis, Minn., LB, $193,276, Contract 1 and 3, single aggregate bit. 14.851 mi. The Eleva-Eau Claire and Institution Roads (Wisconsin State College) at Eau Claire, S.T. Hy. 93, S 090 (5), T 090 (4) and No. 7-(13), Trempealeau and Eau Claire Counties;

Otto Sanders, Inc., Mt. Horeb, Wis., LB, $123,313, Contract 1, base course 6.053 mi. The Hager City-U.S. H. 10 Road, U.S. Hy. 63, F 028-1 (32), Pierce Co. Bids May 6. CD 4/16.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Steinle-Wolfe Co.**, Fremont, O. LB, $1,232,232. Marion Training SCHOOL addns., incl. 2 brick, concrete dormitories, power house, observation and admissions, recreational and custodial care bldgs., MARION, O. State Dpt. P. Wks., Welfare Dpt., 705 Ohio Opts. Bldg., Columbus, O. Bids May 7. CD 4/8.

▲ **The Charles Shutrump & Sons Co.**, 101 Hylda St., Youngstown, O., CA, $1,300,000. diesel electric locomotive REPAIR SHOP, YOUNGSTOWN, O. Erie Railroad Co., I. H. Schram, ch. engr., Midland Bldg., Cleveland 15, O. CD 2/28.

John A. Adinolfi, 3827 Main St., East Chicago, Ind., LB, $680,000, WAREHOUSE and SERVICE BLDG., EAST CHICAGO, IND. Steel Transportation Co., 3201 Callahan St., East Chicago, Ind. Bids Apr. 22. CD 4/9.

▲ **J. W. Snyder Co.**, 307 N. Michigan St., Chicago 1, Ill. CA, $1,100,000. Old Peoples HOME, Wilke Rd., ARLINGTON HEIGHTS, ILL. Missouri Synod of Lutheran Church, 79 W. Washington St., Chicago 2, Ill. Bids Apr. 22, awarded May 7.

▲ **John Griffith & Son**, 228 N. Sasalle St., Chicago, 1, Ill. CA, $30,000,000. Chemical PLANT, 130 St. and Grand Calumet River, CHICAGO, ILL. Allied Chemical & Dye Corp., Barrett Div., 40 Rector St., New York, N. Y. CD 9/10/51.

Erik A. Borg, 6649 N. Ridge Ave., Chicago, Ill., LB, $688,300 Student and Faculty APARTMENT, CHICAGO, ILL. Illinois Institute of Technology, 32 and Wabash Sts., Chicago, Ill. Bids Apr. 30. CD 4/23.

▲ **Abell-Howe Co.**, 53 W. Jackson Blvd., Chicago 4, Ill. CA $1,100,000. Y.M.C.A. HOTEL and BUILDING, Randolph and Marion Sts., OAK PARK, ILL. Young Men's Christian Assn., Oak Park, Ill. Bids Apr. 22, awarded May 5. CD 4/1.

▲ **West Constr. Co.**, 1275 E. Forest Ave., Muskegon, Mich. CA, several million. OIL TERMINAL, incl. 14 m.g. tanks, dock facilities, loading facility, dredg-East Jefferson St., DETROIT, MICH. Hudson Motor Car Co., 2160 E. Jefferson St., Detroit, Mich.

▲ **Sibilsky Realty Co.**, R. J. Sibilsky, pres., Flint, Mich. Owner Builds. $1,000,000. 1 story, 480x550 ft., brick, concrete SHOPPING CENTER bldg. (23 stores), incl. 600-car parking area, FLINT, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Minn., Blue Earth—B.A. 5/27—Fairbault Co., G. G. Buscho, aud., grav. surf. 4 mi. between T.H. 109, 5 mi. west of Wells, 3 mi. north of T.H. 16, S.P. 22-509-01 (SAR 5) Minn. Proj. S 646 (5); grav. surf .3.5 mi. between 3 mi. east of T.H. 169 northeast of Winnebago and S.A.R. 7, S.P. 22-515-03 (SAR 15) Minn. Proj. S 592 (2); grav. surf. 3 mi. between north line of Faribault Co. northeast of Wells and 3 mi. south, S.P. 22-522-01 (SAR 17) Minn. Proj. S 891 (1), $60,000. Plans deposit 90c. each. A. G. Wrucke, co. hy. engr.

† **Tex., Mineral Wells**—VEHICLE SERVICE, etc.—B.A 6/3—U. S. Eng., 100 W. Vickery St., Fort Worth, vehicle service and diesel fuel storage facilities, Wolter Air Force Base, Inv. No. Eng 41-443-52-43. $200,000. CD 7/16.

▲ **Texas**—PIPE LINE, etc.—Bids Asked—Pasotex Pipe Line Co., Box 1249, Houston, 195 mi. 8 in. crude oil pipe line, Wink to El Paso, $2,875,000; booster station at Wink, $275,000; tank farm at El Paso, $200,000; booster station at El Paso, $175,000.

BIDS ASKED—BUILDINGS

† **North Dakota**—RESIDENCES—B.A. After 5/7—U. S. Eng., Fort Lincoln, P.O. Box 300, Bismarck, construct 5 one-story three-bedroom single family frame residences, 10 one-story, two-bedroom single family frame residences, water, sanitary sewer connections, concrete drives, sidewalks, gravel driveway approaches, at New Town; 8 one-story, two-bedroom single family frame residences, two 1-story, two-bedroom duplex frame residences, concrete drives, sidewalks in west-

ern Segment of the Fort Berthold Indian Reservation, Inv. No. CIVENG 32-015-52-53.

▲ **Tex., Edinburg**—COURT HOUSE—B.A. 6/2—Hidalgo Co., Court House, 70,000 sq. ft. masonry court house. $1,500,000. Plans deposit $75. Bid date changed. R. Newell Waters, Weslaco, archt. F. J. Nives, 3908 Main St., Houston, engr. CD 4/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul.

Megarry Bros., St. Cloud, Minn. CA $504,784. grav. base, conc. base, road-mixed bit. base plant-mixed bit. surf., conc. surf. 22.4 mi. between Jct. TH 61 (4 mi. south of Cloquet) and Jct. TH 53 and TH 45 in Cloquet, Carlton Co. CD 4/23, under LB.

MISSOURI—State Hy. Comn., Jefferson City.

C. H. Atkinson Paving Co., Chillicothe, Mo. LB $289,-164. b. conc. 2.661 mi., Jasper Co.;

Payne & Dolan, Inc., 28 S. Dearborn St., Chicago, Ill. LB $67,487 b. conc. 4.5 mi. Crawford Co.; LB $78,260. b. conc. 4.512 mi. Crawford Co.; LB $90,587. b. conc. 4.512 mi. Crawford Co.; LB $90,587. b. conc. 4.846 mi. Phelps Co.; LB $91,786. b. conc. 4.749 mi., Phelps Co.;

W. J. Menelee Constr. Co., 419 W. Main St., Sedalia, Mo. LB $572,595. b. conc. 4.753 mi. Franklin Co.; LB $75,335. graded earth stabilized aggregate base, bit. seal coat 4.774 mi. Shelby Co.;

Clark & Farmer Contg Co., Inc., Camdenton, Mo. LB $71,835 grav. or crushed stone surf. 4.65 mi. Holt Co.;

Granite Bituminous Paving Co., 3943 Duncan Ave., St. Louis, Mo. LB $76,774. b. conc. 3.833 mi. Phelps Co.;

Henry L. Perkinson Constr. Co., 132 E. Douglas St., St. Louis, Mo. LB $81,231. 1 lane of b. conc. pavement 1.373 mi. St. Louis Co.;

Kirkwood Constr. Co., 817 Monroe St., Kirkwood, Mo. LB $78,440. grav. crushed stone surf. 0.874 mi., Jefferson Co. Bids May 2. CD 4/18.

† **Winslow Constr. Co.**, Inglewood, Colo., LB $36,500. earthwork structures for Courtland Canal Wasteway Channel and relocation of Drain 2A, Bostwick Div., Spec. 701C-24e, near Superior, NEBRASKA. Bureau Reclamation Dct. Interior, McCook, Neb. Bids May 6. CD 4/11.

† **U. S. Eng.**, 606 Santa Fe Bldg., Galveston, Tex. cancelled bids to have been opened May 8, seal coat for Barker Dam area, at Buffalo Bayou, Harris Co., TEXAS. CD 3/28.

TEXAS—State Hy. Dpt., State Hy. Bldg., Austin, cancelled bids to have been opened May 21, grading, structures, base, surf. 9.769 mi. Hy. F. M. 1156, from 5.518 mi. east of U. S. 281 to east edge of Wizard Wells and from 1.112 mi. to 5.518 mi. east of U. S. 281. Control No. R 1309-1-4. and C 1309-1-5, Jack Co. CD 5/6.

Darby Corp., 1 and Walker Sts., Kansas City, Kan., LB $41,987, steel elevated storage, elevated tank, BURK-BURNETT, TEX. City, City Hall, Burkburnett, Tex. Bids May 5. CD 4/24.

Soil Conservation Service, Corsicana, Tex. CA $875,000. flood control proj., build 15 earthern lakes to service for flood checks, CORSICANA, TEX. Navarro-Hill Soil Conservation Dist., Corsicana, Tex. CD 4/30.

B. L. English, Kilgore, Tex., LB $235,956, est. $450,-000. approx. 70,000 lin. ft. 14-to 20-in. water supply mains, concrete and c.i. pipe, KILGORE, TEX. City, Kilgore, Tex. Bids May 1. CD 4/22.

▲ † **H. B. Zachry Co.**, Box 2570, San Antonio, Tex., CA $1,420,030. addnl. airfield paving, NOY 72197, KINGSVILLE, TEX. Dpt. Navy, Naval Air Station, Corpus Christi, Tex. Bids Mar. 27, awarded May 8.

San Saba Bd. Educ., San Saba, Tex., Day Labor, $65,000. 2,400 addnl. seat, steel type stadium expansion SAN SABA, TEX. John Linn Scott, 406 W. 17 St., Austin, Tex. archt.

Abernathy McNeme, 2502 Robinhood St., Houston, Tex., CA Approx. $60,000. swimming pool, near WARING, TEX. Episcopal Diocese of West Texas, 108 W. French St., San Antonio, Tex. Wallace B. Thomas, 7007 San Pedro St., San Antonio, Tex., archt.

▲† **Hinman Bros. Constr. Co.**, 17 W 56 Ave., Denver, Colo., LB $1,490,585, embankment and spillway, Jemez Canyon Dam and Reservoir, Inv. No. CIVENG 29-005-52-9, NEW MEXICO. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Apr. 30. CD 3/21.

† **Frank Tatsch**, 1150 N. Main St., Silver City, N. M., CA $840,705. mess, admin. bldg., dormitories, at Holloman Air Force Base, Serial No. 29-005-52-21, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Jan. 30. CD 2/6 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Schulenburg Constr. Co., 730 Cranbrook Dr., Kirkwood 22, Mo. CA $400,000. 41 ranch type RESIDENCES, Meadowridge subdivision, Dickson Ave. and vicinity south of Manchester Rd., KIRKWOOD (ST. LOUIS 22, P. O.), MO. Harold A. Schulenburg, 730 Cranbrook Dr., Kirkwood 22, Mo.

▲ **Moreland Constr. Co.**, 140 Laura St., Wichita, Kan. LB $1,301,665. FACTORY Bldg. No. 36, WICHITA, KAN. Beech Aircraft Co., 6600 E. Central St., Wichita, Kan. Bids Apr. 30. CD 5/5.

J. M. Odom Constr. Co., Box 774, Austin, Tex., CA $458,246, RECTORY AND CHURCH, AUSTIN, TEX. St. Austin's Church Congregation, 403 W. 21 St., Austin, Tex. Bids May 3. CD 4/25.

▲ **The Austin Co.**, 16112 Euclid St., Cleveland, O., CA. $5,250,000, ASSEMBLY PLANT expansion and PARTS SUPPLY DEPOT, DALLAS, TEX. Ford Motor Co., 5200 E. Grand St., Dallas, Tex. CD 4/21.

O. Strother Simpson & Assoc., Sterling Bldg., Houston, Tex., Owner Builds. $365,000. 50 DWELLINGS, HOUSTON, TEX.

Dow Riggs & Assoc., Plano, Tex., Owner Builds. Approx. $300,000. brick, frame DWELLINGS, concrete slab fdn., PLANO, TEX. CD 4/30.

† **Denver Builders, Inc.**, 1420 Ulster St., Denver, Colo., LB, Sch. 1, $247,790; Sch. 3, $296,914, 200x200 ft., flammable materials WAREHOUSE with platforms and canopies, 25-066-52-72, PUEBLO, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Apr. 16. CD 4/17, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

CALIFORNIA—B.A. 6/4—State Div. Hys., P. Wks. Bldg., Sacramento,

Amador and Calaveras Counties—grading, surfacing 4.5 mi. between Jackson and 1.5 mi. west of Mokelumne Hill, near Jackson;

Butte Co.—grading, road work, etc. 3.3 mi. Pennington Rd. and Wade Road.

Contra Costa Co.—construction road 1.5 mi. between 1 mi. south of Pacheco and Monument.

San Luis Obispo Co.—widn. highway lanes 9 mi. new roadway between Templeton and Paso Robles.

SOON LETS CONTRACT—BUILDINGS

Wash., Seattle—CHURCH—B.A.—University Congregation Church, E. 43 St. and Brooklyn Ave., Seattle, Zone 4, soon lets consract, 2 story, bsmnt., rein.-con. 312x217 ft. rein.-con. church. $400,000. Jones & Bindon, Hoge Bldg., Zone 4, archts. CD 10/10, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Davis & Butler, Provo, Utah, CA. $325,672. construct Wasatch Elementary SCHOOL, PROVO, UTAH. Bd. Educ., Provo, Utah. C. S. Ashworth, 44 W. 2nd North St., Provo, Utah, archt. Bids Apr. 29.

▲ **Ellis-Spano**, 2318 Blackstone St., Fresno, Calif., Calif., CA, $759,895, HOUSING Projects Cal 28-2, 28-8, 28-11, Sanger, Firebaugh and Highway City; CA $599,200, HOUSING Projects Cal 28-1, 287,

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P. O. BOX 117 AUGUSTA, GA.

28-10, FRESNO, CALIF. Housing Auth. of Fresno, 2511 Vassar Terrace, Fresno, Calif. Bids May 1. CD 5/9, under I.B.

▲ **Lakewood Park Constr. Co.**, 5327 Lakewood Blvd., North Long Beach, Calif., CA, $1,989,120, 239 frame, stucco DWELLINGS, Arbor, Castana, Oliva and Hayte Sts., Lakewood Park, NORTH LONG BEACH, CALIF. Lakewood Park Mutual Homes No. 15, 5327 Lakewood Bend., North Long Beach, Calif. Paul J. Duncan; 13310 Moorpark St., Sherman Oaks, Calif., archts.

▲ **Bershon Realty Co.**, 11231 W. Pico Blvd., Los Angeles, Calif. Owner Builds. $1,500,000. 185 frame stucco DWELLINGS, Tract 17877, POMONA, CALIF. Louis A. Thomas, 3633 Midvale Ave., Los Angeles, Calif., archt.

▲ **Theo G. Meyer & Sons**, 200 Quint St., San Francisco, Calif., CA, $2,233,000 low-rent HOUSING at Hunters Point Calif. 1-17, SAN FRANCISCO, CALIF. Housing Auth. of City of San Francisco, 440 Turk St., San Francisco, Calif. Bids Apr. 29, awarded May 5. CD 5/6, under I B.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska**—B.A. 6/17—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Eklutna, two 66-in. butterly valves of Government design, with operating units, handling equip., anchor bolts, anchor bolt templates, bedplates, and anchor bolt sleeves and sleeve nuts; or 2 valves of contractors design with operating units, expans. joints, handling equip. and embedded anchorages for Eklutna Power Plant, Eklutna Proj. Inv. DS-3716. CD 2/11/49.

U. S. POSSESSIONS

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Phillipine Islands**—B.A. 6/10—National Power Corp. of Manila, Natnidad Bldg., Manila, 2 diversion tunnels, 600 meters long, 7 meters in diam. at Ambuclao. Total $50,000,000. Harza Eng. Co., 400 W. Madison St., Chicago 6, Ill., engr. CD 12/13/45.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

N. B., Chatham—GARAGE. etc.—B.A. 5/27—C. J. Connolly, engr. c/o Defence Constr. Ltd., 1032 Gottingen St., Halifax, N. S., standard M. E. garage bldg. and refueling tender garage, at R.C.A.F. Station, approx. $500,000. Plans deposit $100.

P. E. I., Summerside—GARAGE, etc.—B.A. 5/27—C. J. Connolly, engr. c/o Defence Constr. Ltd., 1032 Gottingen St., Halifax, N. S., standard M. E. garage bldg. and refueling tender garage at R.C.A.F Station, Approx. $500,000. Plans deposit $100.

BIDS ASKED—BUILDINGS

Ont., Camp Borden—APARTMENT UNITS—B.A. 6/3—Central Mortgage & Housing Corp., 441 Queen's Quay W., Toronto, Ont. 116 rein.-con. apartment units at military base. $800,000. R. P. Opie, c/o owner, engr. Plans deposit $100.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

BRITISH COLUMBIA—Minister of P. Wks., Douglas Bldg., Victoria,

Marwell Constr. Co. Ltd., 1500 West Georgia St., Vancouver, B. C., LB, $328,400, bit. roads in East Kootenays area, Section 1; LB, $102,600, same project as above Section 1A;

Storms Contg. Co., (Pacific) Ltd., 550 Burrard St., Vancouver, B. C., LB, $335,630, bit. roads in Okanagon Valley area, Section 3; LB $451,018, reconstr. 5.53 mi. Penticton-Trout Creek section of Okanogan Highway;

E. R. Taylor Constr. Co. Ltd., 8699 Hudston St., Vancouver, B. C., LB, $166,871, bit. roads in West Kootenays area, Section 2. Bids May 1. CD 4/21.

BRITISH COLUMBIA—Minister of P. Wks., Douglas Bldg., Victoria,

Dawson, Wade & Co. Ltd., 775 Clark Dr., Vancouver, B. C., LB, $326,462, bit. highways in Central Interior Section 4; LB, $181,806, bit. hy. in Central Interior, Section 4A;

Columbia Bitulithic Ltd., Granville Island, Vancouver, B. C., LB, $284,036, bit. roads in Lower Mainland area, Section 5; LB, $229,280, bit. roads in Lower Mainland area, Section 5A;

General Constr. Co. Ltd., Granville Island, Vancouver, B. C., LB, $439,940, bit. roads on Vancouver Island area, Section 6;

City Constr. Co. Ltd., 107 East 1 Ave., Vancouver, B. C., LB, $119,800, bit. roads in North Vancouver, Section 7. Bids May 2. CD 4/21.

▲ **Dawson, Wade & Co. Ltd., 775 Clark Dr., and British Columbia Bridge & Dredging Co. Ltd.**, Howe St., Vancouver, B. C., LB, $5,570,615, span approaches and connections for Granville Street Bridge, footings, piers, frame and deck on approaches will be rein.-con. VANCOUVER, B. C. City, City Hall, Vancouver, B. C. Bids May 5. CD 3/20.

▲ **J. P. Porter & Sons Ltd.**, 1010 St. Catherine St. W., Montreal, Que., CA, $1,228,959, railway wharf repairs SUMMERSIDE, P. E. I., Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Awarded May 3. CD 9/25, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Richard & B. A. Ryan Ltd., 1705 William St., Montreal, Que. CA, $265,000, 1 story, 120x180 ft., rein.-con., steel frame, brick, block PLANT and OFFICES, Cote St. Michel Rd., MONTREAL, QUE. Benjamin Moore & Co. of Montreal Ltd., 141 St. Peter St., Montreal, Que. Ross, Patterson Townsend & Fish, Dominion Square Bldg., Montreal, Que., archts.

Proposed Projects——

WATER SUPPLY

La., St. Bernard—St. Bernard Parish, Parish WW Dist. 1, water filtration plant, WW sys. extensions, $500,000. J. W. Goodwin Eng. Co., 2111 Seventh Ave. S., Birmingham, Ala., consult. engr.

Mich., Bay City—City, Water Dpt., water sys. incl. water mains, water main crossing river to replace 2 small mains. $200,000. Ayres, Lewis, Norris & May, 500 Wolverine Bldg., Ann Arbor, consult. engrs. CD 4/18.

Mo., Kansas City—City, c/o Melvin P. Hatcher, dir. Water Dpt., City Hall, Zone 6, 20 ft. concrete flood wall around Turkey Creek pumping station on Kaw River, $350,000. Lutz & May, Finance Bldg., Kansas City, Mo., consult. engrs. CD 4/27/51.

O., Troy—City, Hall, WW sys. imprvs. $800,000.

Wash., Wenatchee—City, City Hall, 1 m.g. reservoir, $200,000.

▲ **Tex., Dallas**—City, City Hall, Main and Harwood Sts., voted bonds, Item 12, water storage, concrete, ground and elevated steel, $1,601,000; Item 13, new water lines to developers of new additions, $1,700,000; Item 14, Sunset Booster Water Station, $135,000; Item 15, water service lines and standardize mains for Pleasant Mound, Pleasant Grove and Lake Junea areas, $1,178,000; Item 16, various water supply mains throughout city where not previously mentioned, $10,736,000. J. G. Rollins, ch. P. Wks. Engr. CD 4/3.

Va., South Boston—Town, D. G. Weiford, mgr., voted bonds, Apr. 29, water sys. imprv. $800,000. CD 3/27.

SEWERS, WASTE DISPOSAL

Colo., Englewood—South Englewood Sewer Dist., Englewood, voted bonds, sewage disposal and sewerage sys., $450,000. Dale H. Rae, Boston Bldg., Denver, consult. engrs. CD 4/24/51.

▲ **Mich., Benton**—Benton Twp., sewerage sys. incl. trunk and laterals sewers, sewer mains, sewage disposal plant treatment facilities. $1,000,000. R. W. Petrie & Assoc., 557 Paw Paw Ave., Benton Harbor, consult. engrs.

O., Gallipolis—City, City Hall, $950,000 bond election Nov. 4, sewage disposal plant. Burgess & Niple, 584 E. Broad St., Columbus, consult. engrs. CD 2/15/46.

▲ **O., Youngstown**—City, City Hall, Boardman and Phelps Sts. sewage disposal project. $9,000,000-$10,000,000. Jones & Henry, Security Bldg., Toledo, consult. engrs. CD 10/31/46.

▲ **Tex., Dallas**—City, City Hall, Main and Harwood Sts., voted bonds, Item 10, sewage disposal plant, $500,000; Item 11, sanitary sewers, $8,000,000; Item 36, storm sewers, $5,432,000. J. G. Rollins, Ch. P. Wks. Engr. CD 4/3.

Va., South Boston—Town, D. G. Weiford, mgr., South Boston, voted bonds Apr. 29, sewerage sys. imprvs. $300,000. CD 3/27, under Water Supply.

BRIDGES

▲ **Calif., Los Angeles**—Los Angeles Co., Hall of Records, four-lane highway bridge over Los Angeles River on Compton Blvd., Compton, $1,000,000. S. R. Kennedy, c/o owner, engr. CD 9/20/45.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

Boston—bridge expressway across Boston Harbor from Columbia Circle to Hingham Circle, Hingham, $35,000,000.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.

Winchester—overpass B. & M. R.R., Winchester Square, $4,000,000. Thomas Worcester, Inc., 84 State St., Boston, consult. engr. CD 4/12/46, under Mass., Winchester.

Mo., Kansas City—City, City Hall, Elmwood Ave. and J. C. Nichols Parkway, bridges across Brush Creek, $300,000.

STREETS AND ROADS

ARKANSAS—State Hy. Dpt., Little Rock,

Arkansas Co.—widn. 12 mi. Hy. 30, Stuttgard-Almyra Rd., $100,000;

Cleveland Co.—base and asph. surf. 8 mi. Hy. 15, Colmer, $240,000;

Greene Co.—9.94 mi. Hy. 90, O-Kean, $338,980;

Independence Co.—8.1 mi. Hy. 89, Sage, $90,000;

Miller Co.—work on Hy. 160, Bright Star Rd., Doddridge, $43,000;

Yell Co.—6 mi. Hy. 7, Ola, $60,000. Alfred E. Johnson, Little Rock, engr.

FLORIDA—State Road Dpt., Tallahassee,

De Soto Co.—imprv. Highway 70, Fort Ogden Rd. and Lake Annie Rd. $850,000.

Fla., Tampa—City, City Hall, resurfacing 150 streets, $650,000. CD 8/19/46.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, and City of Baltimore, 303 Municipal Bldg., Baltimore, preliminary studies tunnel under Baltimore Harbor, $20,000,000-$30,000,000, Ole Singstad, 24 State St., New York, N. Y., consult. engr. advising on route selection.

Mo., Kansas City—City, c/o L. P. Cookingham, mgr., City Hall, Zone 6, widn. Hy. 69 to east city limits, $480,000.

▲ **Tenn., Knoxville**—City, City Hall, widn. Broadway St. $1,121,231. Leonard Bailey, city engr. CD 2/8/45.

▲ **Tex., Dallas**—City, City Hall, Main and Harwood Sts., voted bonds, Item 1, new street opening and paving, $1,500,000; Item 2, city-wide street imprvs. and paving $7,690,000. J. G. Rollins, Ch. P. Wks. Engr. CD 4/3.

Tex., Houston—D. D. Hutchison & Assoc., 4361 Arbord St., street constr., and hard type paving, in new sect. of Oak Meadows addn. $200,000.

▲ **VERMONT**—State Hy. Dpt., Montpelier,

Addison Co.—extend pavement north 0.4 mi. on Lake Shore Rd., Town of Addison.

extend pavement 0.4 mi. on Rte. 116 south of Bristol Village to the Middlebury town line, Town of Bristol.

extend pavement 0.3 mi. east of Leicester Junction toward Leicester Corners, Town of Leicester.

extend pavement 0.75 mi. north of East Middlebury on Rte. 116 Town of Middlebury.

extend pavement 0.9 mi. north of East Monkton toward Monkton Ridge, Town of Monkton.

extend pavement 0.6 mi. north on Rte. F-9 toward Larrabee's Point, Town of Orwell.

extend pavement 0.5 mi. south of Panton Corners, Town of Panton.

extend pavement 0.7 mi. nortwest of Salisbury Village toward Salisbury Station, Town of Salisbury.

extend pavement 0.5 mi. east of Soreham Village through Richville, Town of Shoreham.

extend pavement 0.3 Rte. 23 north of Weybridge Hill, Town of Weybridge.

extend pavement 0.4 mi. west of Leicester Junction toward Whiting Village, Town of Whiting.

Bennington Co.—extend pavement 0.8 mi. south from East Arlington to Warm Brook Rd., Town of Arlington.

extend pavement 0.5 mi. on South Stream Road south of Bennington Village toward Pownal town line, Town of Bennington.

extend pavement 0.85 mi. south of Dorset Village on West road, Town of Dorset.

complete the pavement 0.4 mi. on West Road between Manchester Village and South Dorset, Town of Manchester.

complete the pavement 0.75 mi. between Heartwellville and Searsburg town line, Town of Readsboro.

extend pavement 0.5 mi. north of Rupert village toward West Pawlet, Town of Rupert.

paving 1.85 mi. from Sandgate village south to Arlington town line, Town of Sandgate.

extend pavement 0.5 mi. northwest of North Bennington on the White Creek Road, Town of Shaftsbury.

Caledonia Co.—reconstruction, paving 1 mi. between Barnet village and West Barnet, Town of Barnet.

complete the pavement 1.2 mi. between East Burke and West Burke by way of Burke Hollow, Town of Burke.

extend pavement 0.5 mi. south from North Danville toward Danville Village, Town of Danville.

extend pavement 0.7 mi. toward Lyndonville on the Back Lyndon Rd., Town of St. Johnsbury.

Chittenden Co.—extend pavement 0.55 mi. east from Rte. U. S.-7, toward Mt. Philo, Town of Charlotte.

extend pavement 0.5 mi. north of Colchester Village on Cobble Hill Road to Milton town line, Town of Colchester.

complete the pavement 1.2 mi. between Hinesburg village and Shelburne village by way of Shelburne Falls, Town of Rinesburg.

paving 0.8 mi. between Huntington Center and Huntington Village, Town of Huntington.

extend pavement 1 mi. from Jericho Village toward Jericho Center, Town of Jericho.

extend pavement 1 mi. south of Milton Village on Cobble Hill Road toward Colchester Village, Town of Milton.

extend pavement 0.5 mi. west of Richmond Village toward Hinesburg village and north toward Jericho Center, Town of Richmond.

Franklin Co.—extend pavement 1 mi. west of Bakersfield village toward East Fairfield, Town of Bakersfield.

extend pavement 1 mi. north of Enosburg Falls toward West Berkshire, Town of Berkshire.

extend pavement 1 mi. east of Fairfax village toward Binghamville, Town of Fairfax.

complete the pavement 1.1 mi. between Fairfield village and St. Albans, Town of Fairfield.

extend pavement 0.75 mi. west of Binghamville toward Fairfax village, Town of Fletcher.

extend pavement 1 mi. east of Franklin Village toward East Franklin on the Lake Road, Town of Franklin.

extend pavement 1 mi. south of St. Albans Bay to Mellville Landing, Town of Georgia.

complete the pavement 1 mi. between St. Albans and Highgate Center by way of Highgate Falls, Town of Swanton.

Lamoille Co.—extend pavement 0.5 mi. north of Rte. 15 toward Fletcher Village on Harbor Rd., Town of Cambridge.

extend pavement 0.7 mi. north of Hyde Park Village toward Centerville, Town of Hyde Park.

extend pavement 1 mi. south of Morrisville on the Randolph Rd., Town of Morristown.

Orange Co.—extend pavement 1 mi. southwest of Goose Green toward Corinth Corners, Town of Corinth.

extend pavement 0.3 mi. on east shore of Lake Morey, Town of Fairlee.
extend pavement 0.8 mi. east of Tunbridge village toward Strafford village, Town of Tunbridge.
extend pavement 0.5 mi. west of Williamstown village toward South Northfield, Town of Williamstown.
Orleans Co.—extend pavement 1 mi. Rte. 56 east of Barton village toward the Westmore town line, Town of Barton.
reconst. and paving 0.5 mi. south of Beebe Plain toward U. S. Rte. 5, Town of Derby.
extend pavement 1.25 mi. east of Rte. 122 toward Sheffield Village, Town of Glover.
extend pavement 0.75 mi. north of Greensboro village toward East Craftsbury, Town of Greensboro.
extend pavement 0.5 mi. east of Derby Line toward Holland Village, Town of Holland.
complete the pavement 0.6 mi. on Rte. 58 between Orleans and Irasburg Village, Town of Irasburg.
extend pavement 0.6 mi. Rte. 111 east of Derby Center toward Morgan Village, Town of Morgan.
complete the pavement 0.6 mi. on Beadle Rd. between Newport Center and Rte. 100, Town of Newport.
extend pavement south of North Troy toward Troy Village, Town of Troy.
complete the pavement 0.3 mi. on Rte. 56 between Barton Village and Rte. 5A at Willoughby Lake, Town of Westmore.
Rutland Co.—extend pavement 2 mi. north of U. S. Rte. 4 toward East Hubbardton, Town of Castleton.
extend pavement 0.95 mi. east of North Claredon on Cold River Rd., extend 0.7 mi. pavement south of Rutland City on Creek Rd., Town of Clarendon.
extend pavement 0.75 mi. west of Danby Village toward Danby Four Corners, Town of Danby.
Paving 2.55 mi. Rte. 3 from Middleton Springs town line northerly toward Ira Village, Town of Ira.
extend pavement 2 mi. Rte. 3 east of Middleton Springs Village toward Ira Village, Town of Middletown Springs.
extend pavement 1.25 mi. Rte. 3 north of Pawlet Village toward Middleton Springs.
extend pavement 0.85 mi. west of Tinmouth Village to Middletown Springs town line, extend pavement 1 mi. north on Rte. 3 to the Ira town line, Town of Tinmouth.
complete the pavement 0.85 mi. on Rte. 103A between East Wallingford and Wallingford village, Town of Wallingford.
extend pavement 1 mi. north of West Rutland Village on Marble St., Town of West Rutland.
Washington Co.—extend pavement 0.6 mi. north of Cabot Village toward Walden Station, Town of Cabot.
extend pavement 0.5 mi. south of North Montpelier Village toward Plainfield, Town of East Montpelier.
extend pavement 1.25 mi. west of Irasville toward Mad River Glen, Town of Fayston.
paving 0.2 mi. on road between North Montpelier and Plainfield, Town of Marshfield.
extend pavement 0.5 mi. on Rte. 12A west of the Northfield Center toward Roxbury Village, Town of Northfield.
extend pavement 0.7 mi. north of Plainfield village toward North Montpelier, Town of Plainfield.
Windham Co.—extend pavement 0.8 mi. southwest of Guilford village toward Guilford Center, Town of Guilford.
complete the pavement 0.65 mi. on Rte. 8 between North Wardsboro and East Jamaica, Town of Jamaica.
extend pavement 1.25 mi. Rte. 8 north from Londonberry village toward Weston village, Town of Londonberry.
complete the pavement 0.5 mi. between Williamsville Station and Williamsville, Town of Newfane.
extend pavement 1 mi. Rte. 35 north of Townsend Village toward Cambridgeport, Town of Townsend.
extend pavement 0.7 mi. west of North Wardsboro toward Wardsboro Center, Town of Wardsboro.
extend pavement 1 mi. Rte. 8A, south of Jacksonville toward Massachusetts state line, Town of Whitingham.
Windsor Co.—complete the pavement 0.75 mi. between Bridgewater Corners and Briggs, Town of Bridgewater.
extend pavement 1 mi. Rte. 131 east of Cavendish village toward Downers Corner, Town of Cavendish.
extend pavement 0.75 mi. north of Hartford Village on Christian St., Town of Hartford.
paving 0.4 mi. Rte. 100 south of Ludlow Village toward Weston, Town of Ludlow.
reconstruction and paving 0.2 mi. Rte. 10A, north of Lewiston, Town of Norwich.
extend the pavement 0.75 mi. north of Pomfret village toward North Pomfret, Town of Pomfret.
extend pavement 0.7 mi. east of South Royalton on Back River Rd., Town of Royalton.
reconstruction and paving 1 mi. Skitchewaug Trail, Rte. 10, east of Springfield Village, Town of Springfield.
extend pavement 1 mi. east from Rte. 106 at Downer's Corner through Amsden village, Town of Weathersfield.
extend pavement 1.5 mi. between Weston Village and Londonberry Village, Town of Weston.
extend pavement north 1 mi. from Brownsville toward Hartland Four Corners, Town of West Windsor.
reconstruction and paving 0.25 mi. between Windsor Village and Brownsville, Town of Windsor.

AIRPORTS

† **Neb., Fort Crook**—FUEL STORAGE—U. S. Eng., 1709 Jackson St., Omaha, liquid fuel storage, dispensing facilities, troop housing and utilities at Offutt Air Force Base. $881,000. CD 4/29.
▲† **N. J., Wrightstown**—BUILDINGS, etc.—Dpt. Army, 121 N. Broad St., Phila., Pa., buildings, hangar, passenger and freight terminals $1,000,000-$3,000,000; grading, storm drainage, $1,000,000-$3,000,000; apron paving, $3,000,000-$5,000,000, Whitman, Requardt & Assocs., 1304 St. Paul St., Baltimore, Md., consult. engrs.; heating plant and distribution system, $1,000,000-$3,000,000, American Hydrotherm & Adache & Case, 33-70 12 St., Long Island City, N. Y., consult. engrs; all foregoing work at McGuire Air Force Base.
▲† **S. C., Charleston**—AIR BASE—U. S. Eng., Custom House, troop housing barracks and BOQ, $4,745,000; paving aprons, taxiways and runways, $3,061,000; utilities, $3,286,000; warehouse, shops, automotive and maintenance, $1,171,000; support facilities, $301,000; headquarters, $652,000; family housing, $62,000; operational facilities, $258,000; small arms range, $15,000; lighting and communications facilities, $577,000; liquid fuel storage and dispensing, $1,820,000; at Charleston Air Base, North Charleston. CD 9/19.
▲ **Tex., Dallas**—AIRPORT—City, City Hall, Main and Harwood Sts., voted bonds, airport. $1,500,000. CD 4/3.
▲† **Tex., Galveston**—AIR BASE—U.S. Eng., 606 Santa Fe Bldg., runway extens., imprvs. $3,685,000; fuel storage, $100,000; shops, $500,000; taxiways, $450,000; navigation aids, $90,000; barracks, administrative, operational bldgs., $1,000,000; lighting, field and area, $85,000; airfield and area pavement, $100,000; storage or warehousing, $250,000, for Galveston Air Force Base. CD 10/30.

AMERICANS ABROAD

Mexico, Santa Elena—Sria de Recuros Hidraulicos (Hydraulic Resources Ministry) Mexico City, plans storage-derviation dam, state of Nuevo Leon. $500,000.

PUBLIC BUILDINGS

Ala., Scottsboro—HOUSING—Scottsboro Housing Auth., Scottsboro, plans by Turner & Northington Medical Arts Bldg., Florence, 100 housing units, $750,000.
▲ **Calif., Inglewood**—SCHOOL—Inglewood Elementary School Dist., 111 N. Grevilla St., defeated $2,275,000 bonds, school facilities. CD 2/29.
Calif., Merced—SCHOOL—Merced City Elementary School Dist., 205 23 St., Merced, voted $600,000 bonds, schools. Walter Wagner, 1830 Van Ness Ave., Fresno, archt. CD 2/21.
Ill., Barrington—SCHOOL—School Dist. 4, Barrington, plans by Perkins & Will, 309 Jackson Blvd., Chicago Zone 6, grade school. Illinois and Cook Sts. $600,000.
Ky., Frankfort—STATE CAPITOL—State, Div. Eng., State Office Bldg., structural changes in interior of State Capitol. $500,000.
▲ **Ky., Lousville**—MEDICAL SCHOOL—City, City Hall, medical school addns., University of Louisville, First and Chestnut Sts. $1,500,000.
▲ **Ky., Louisville**—PENAL FARM—City, City Hall, penal farm to replace city work house. $2,250,000.
▲ **Ky., Louisville**—POLICE HEADQUARTERS—City, City Hall, plans by W. S. Arrasmith, Lincoln Bank Bldg., central police headquarters. $1,500,000.
La., New Orleans—SCHOOL—Orleans Parish School Bd., 703 Carondelet St., plans by Wm. R. Burk 632 Pirates Alley, Oak Park Elementary School. $500,000.
Mass., Amherst—DORMITORIES—State, University of Mass., Kenneth W. Johnson, treas., Amherst, plans by Louis W. Ross, 131 State St., Boston, two 4 story, bsmt., rein.-con., brick dormitories for women. $750,000.
Mass., Ipswich—SCHOOL—Town, School Dpt., 23 Green St., high school. $660,000.
▲ **Mass., Saugus**—SCHOOL—Town, Town Hall, plans by S. W. Haynes & Assoc., 336 Main St., Fitchburg, high school, $2,500,000. CD 12/4/51.
Mass., Somerville—GARAGE—City, Mayor's Office, City Hall, 70,000 sq. ft. garage city yard, $685,000.
Mich., Bay City—LIGHT PLANT—City, Municipal Electric Light Dpt., brick, steel, concrete municipal lighting plant imprvs. $500,000, Ayres, Lewis, Norris & May, 500 Wolverine Bldg., Ann Arbor, consult. engrs. CD 4/18.
▲ **Minn., Fairbault**—SCHOOLS—Bd. Educ., Independent School Dist. 1, R. W. Klenier, clk., defeated $1,300,000 bonds Aug. 29, schools. CD 4/23.
Miss., Brookhaven—PLANT—City, plans by Turner & Dean, 221 N. State St., Jackson, plant for lease to Johnston Mfg. Co. $600,000. CD 3/13.
Miss., Picayune—HOUSING—Picayune Housing Auth., Picayune, plans by Morris L. McNair Rosenbaum Bldg., Meridian, 65 housing units, $550,000. CD 3/14/50.
Mo., Warrensburg—DORMITORIES—Central Missouri State College, 2 dormitories, $700,000.
▲† **N. J., Hammondton**—DEPOT—U. S. Govt. Air Material Command, c/o Dpt. Army, 121 N. Broad St., Phila., Pa., plans by L. P. Kooken Co., 46 W. High St., Carlisle Pa., aircraft and maintenance depot. $73,500,000.
▲ **N. C., Fayetteville**—HOSPITAL—Bd. Comrs. Cumberland Co., R. E. Nimocks, clk., Fayetteville, bond election May 31, county hospital, $1,350,000. Bond issue reduced. CD 4/29.
▲ **N. C., Fayetteville**—SCHOOLS—Bd. Comrs. Cumberland Co., R. E. Nimocks, clk., Fayetteville, bond issue reduced, schools, $2,150,000. CD 3/10.
▲ **O., Bedford**—HIGH SCHOOL—Bd. Educ., Bedford, plans by Charles B. Rowley & Assoc., Keith Bldg., Cleveland, 1 and 2 story sects., brick, stone high school, Northfield Rd. $3,000,000.
▲ **O., Hamilton**—SCHOOLS—Bd. Educ., 322 Dayton Ave., bond election June 26, 3 schools, imprv. present schools. $4,750,000. CD 11/13.
Okla., Ardmore—HOSPITAL—Carter Co. and Southern Oklahoma Hospital, Ardmore, plans by Harold Flood, Ardmore, 90-bed hospital. $900,000.
S. C., Beaufort—SCHOOLS—Beaufort School Dist., Beaufort, plans by Halsey & Cummings, 4 Broad St., Charleston, Consolidated Elementary and High School, St. Helena Island. $634,000.
Tenn., Gallatin—HOUSING—Gallatin Housing Auth., Gallatin, housing units. $650,000.
▲ **Tex., Dallas**—LIBRARY—City, City Hall, Main and Harwood Sts., voted $1,250,000 bonds, Item 5, public library. $2,590,000. J. G. Rollins, Ch. P. Wks. Engr. CD 4/3.
Tex., Dallas—SERVICE CENTER, etc.—City, City Hall, Main and Harwood Sts., Item 8, service center (storage for equip. supplies, etc.), $750,000; Item 7, mechanical repairing garage, $250,000. J. G. Rollins, Ch. P. Wks. Engr. CD 4/3.
▲ **Tex., Fort Worth**—SCHOOLS—Fort Worth Independent School Dist., J. P. Moore, supt., Fort Worth, Main Senior High School, $1,250,000; Northside Junior-Senior High School, $750,000; Southside Junior-Senior High School, $750,000; Eastside Elementary School, $400,000; auditorium, $400,000; vocational Shop Units, $400,000; stadium, and athletics and playgrounds, $375,000; cafeteria, $600,000; grade school, $375,000; Southside Elementary School, $500,000; Westside Elementary School, $600,000; Northside Elementary School, $750,000. CD 5/19/50.
Tex., Kennedy—HOUSING—Kennedy City Housing Auth., Kennedy, 100 HOUSING units, incl. some duplex type bldgs. $800,000.
Tex., San Antonio—HOUSING—San Antonio Housing Auth., 400 Labor St., Tex. 6-15, 130 unit low-cost housing, $975,000. CD 10/24/49.
Va., Gloucester—SCHOOL—Gloucester Co. School Bd., Gloucester, plans by Samuel Mayo, Sauer's Bldg., Richmond, school, $500,000.
▲ **Va., Luray**—SCHOOLS—Page Co. Bd. Educ., Luray, high school, $500,000; elementary school, $500,000.
▲ **Va., Richmond**—HIGH SCHOOL—Henrico Co. School Bd., 22 and Main Sts., Tuckahoe High School. $1,000,000. CD 5/24.
▲† **Wash., Seattle**—PREPARATION BLDG., etc.—Dpt. Air Force, Pentagon Bldg., Wash., D. C., 422x922 ft. material preparation bldg. and 120x422 ft. maintenance, transportation and boiler bldg., to be occupied by Boeing Airplane Co., $6,500,000. The Austin Co., 16112 Euclid Ave., Cleveland, O., consult. engr. B. Axman, c/o owner, plant engr. CD 9/5.
N. S. Halifax—MESS—E. J. Connolly, engr. Defence Constr. Ltd., 1032 Gottingen St., Halifax, officers' mess at H.M.C.S. "Stadacona" here, $500,000.
▲ **Ont., Brantford**—HOSPITAL—Brantford General Hospital Board of Governors, City Hall, plans by Harold J. Smith, 62 Charles St. E., Toronto, 200-bed hospital, $4,00,0000; nurses residence $1,150,000. Neergaard, Agnew & Craig, 134 Bloor St. W., Toronto, Ont., consult. engrs. CD 1/16.

COMMERCIAL BUILDINGS

Fla., Miami—MOTOR COURT—P.N. Co., c/o Leonard H. Glasser, archt., 835 Lincoln Rd., Miami Beach, 108-unit motor court. $500,000.
Ga., Augusta—RESIDENTIAL DEVELOPMENT—Hammond Hills Corp., c/o W. H. Burkhalter, 811 Lake Ave., residential development. Approx. $500,000.
Neb., Omaha—SHOPPING CENTER—Ernest Lied, 27 and Harney Sts., plans by Cecil Martin & Assoc., 503 Karbach Block, suburban shopping center, 76 and Dodge Sts. $750,000.
▲ **N. Y., New York**—DORMITORY—Cornell University Medical College, 445 E. 69 St., Zone 21, plans by Rogers & Butler, 219 E. 44 St., Zone 17, dormitory, to be part of F. S. Olim Hall, 69 St. and York Ave. $1,500,000. CD 1/11.
▲ **N. Y., New York**—APARTMENT—Martin Fisher, 120-44 Queens Blvd., Kew Gardens, plans by Lawrence M. Rothman, 332 E. 149 St., Zone 51, 13 story apartment, Kappock St. and Palisade Ave. $2,200,000.
▲ **N. Y., New York**—HOSPITAL—The New York Infirmary, 1-9 Livingstone Pl., plans by Skidmore Owings & Merrill, 575 Madison Ave., Zone 22, 10 story hospital at site. $3,813,400. Severud-Elstad-Krueger, 415 Lexington Ave., Zone 17, consult. engrs. CD 9/15/49.
N. Y., New York—APARTMENT—Moses J. Perlman, 240 Central Park South, Zone 19, plans by Mayer & Whittlesey, 31 Union Square, Zone 3, 12 story apartment, 13-17 W. 12 St. $800,000.
▲ **O., Toledo**—SHOPPING CENTER—Phillip Joseph, 628 Lagrange St., plans by Nelson E. Thal, 2616 W. Central St., 20-unit L-shaped shopping center on Secor site, at Door St. and Secor Rd. Approx. $1,000,000.
▲ **O., Toledo**—SHOPPING CENTER—Alfred I. Soltz & Assoc., Leader Bldg., Cleveland, shopping center, of Central Ave. between Alisdale Dr. and Cheltenham St. $2,000,000.
▲ **Tex., Houston**—DWELLINGS—J. P. Boone, 4320 Ariel Rd., plans by Phillip G. Willard & Lucian T. Hood, Jr., 3940 Main St., and Allen Williams, 5110 S. Shepherd St., Job. No. 1, 4 two-story masonry high-class dwellings, air-conditioning, etc. in Afton Oaks, $300,000; Job. No. 2, five 2-story masonry high-class dwellings, air-conditioning, on Bryan Mawr, $340,000; Job. No. 3, 8 dwellings, various locations, $375,000; Job. No. 4, 6 masonry ranch dwellings, various locations, $310,000; five 1 and 2 story masonry dwellings, concrete pier and beam fdns., air-conditioning, Cedar Creek Dr., Huckelbery Lane, Deliver Dr. $315,000.
▲ **Tex., Houston**—OFFICES—Braeswood Building & Development Co., 2265 W. Holcombe Blvd., plans by Ben F. Greenwood, 2265 W. Holcombe Blvd., 3 story

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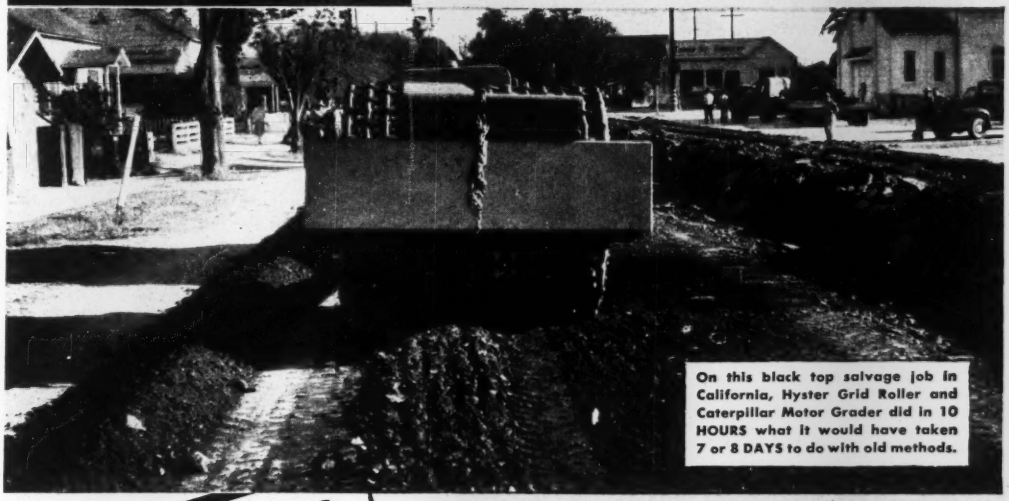

On this black top salvage job in California, Hyster Grid Roller and Caterpillar Motor Grader did in 10 HOURS what it would have taken 7 or 8 DAYS to do with old methods.

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✓ **TIME** — The Grid Roller pulverizes old surface material, compacts road base and new surface courses faster and better than old-style methods and equipment.

✓ **MATERIAL** — On normal salvage, the Grid Roller provides sufficient mix from old material for laying down new surface.

✓ **BINDER** — Usable binder in salvaged material is exposed, thus often reducing new oil required from ¾ to ⅜ gal. per sq. yd.

✓ **EQUIPMENT** — The Grid Roller does triple duty — reclaims old mat, compacts base, rolls new surface courses.

✓ **LABOR** — One operator performs simultaneously the pulverizing and scarifying or blading operations. Faster road reclaiming also means less labor time on the job.

BITUMINOUS ROAD SALVAGE has been revolutionized by the Hyster Grid Roller. Now it is **economically possible** to salvage, rejuvenate and use the old, worn-out surface material for re-laying the new road surface.

The procedure: (1) SCARIFY or rip up the worn surface; (2) PULVERIZE—Grid Roller reduces chunks to original loose road mix; (3) PREPARE BASE — compact with the Grid Roller; (4) LAY DOWN new surface, using salvaged road mix material, and rolling out with Grid Roller; (5) TURN OVER TO TRAFFIC.

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KERRIGAN *a Great Name in Grating*

With the WELD that Never Fails!

Kerrigan grating is a one-piece INSEPARABLE unit. Bearing bars and cross-bars are WELDFORGED by Kerrigan's exclusive process into ONE PIECE. Resulting grating is a strong, anti-slip, easy-to-clean grating that affords maximum light and ventilation, a minimum of installation and maintenance expense, and long years of trouble-free use.

BONDERIZED for rust resistance and extra protection against corrosion! Holds paint to metal for durable finishes.

WRITE FOR CATALOG AND SPECIFICATION SHEETS; and for a copy of "A PICTURE STORY OF KERRIGAN" which shows how KERRIGAN *Weldforged* steel grating is custom engineered . . . and how Kerrigan's Never-Fail Weld stands up under the severest kind of punishment. Just write on your letterhead for free copy.

Weldforged GRATING DIVISION

KERRIGAN IRON WORKS, INC.
NASHVILLE, TENNESSEE
GENERAL SALES OFFICE, 274 MADISON AVE., N.Y.C.
MID-WEST SALES OFFICE, 2725 W. PETERSON AVE., CHICAGO

up to 22 times more operations *without re-lubrication!*

HOMESTEAD-REISER
Self-Sealed, lubricated **PLUG VALVES**

On actual test Homestead-Reiser Valves remained drop-tight, without re-lubrication, through 22 times more operations than Valve "A" and through 3 times as many as Valve "B", which proves that they need less attention . . . require less lubricant. You can prove the superiority of Homestead-Reiser Valves to your own satisfaction by installing a few side by side with any other lubricated plug valves.

Write for Catalog 39-5 for sizes and prices.

TEST RECORD	
VALVE	No. of Operations Without Re-Lubrication
Valve "A"	5
Valve "B"	33
HOMESTEAD-REISER VALVE	110

HOMESTEAD VALVE MANUFACTURING CO.
P. O. Box 31 *Serving since 1892* Coraopolis, Pa.

office, $500,000; 10 story office, $1,000,000; 3 story office, $600,000. CD 4/29.

▲ Tex., Houston—DWELLINGS—Fairworth Corp. Constr. Co., 5329 Westheimer St., Sect. 1, 35 brick veneer dwellings, concrete slab and beam fdn., air-conditioning, $875,000; 38 brick veneer dwellings, concrete slab and beam fdn., air-conditioning, $950,000, both east of Yorktown Rd.; Sect. 2, 25 brick, stone dwellings, concrete pier beam fdn., air-conditioning, etc., $1,000,000; 28 brick, masonry type dwellings, concrete pier and beam fdn., air-conditioning, $1,120,000, both west of Sage Rd.

▲ Tex., Pasadena—BANK and OFFICE—Pasadena Savings & Loan Assn., Pasadena, plans by Chase & Baer, 1309 Anita St., Houston, 5 story, 75x133 ft. masonry bank and office, E. Shaw Ave. and Main St. $1,000,000.

▲ Wis., Milwaukee—HOSPITAL—Evangelical Deaconness Hospital, 1821 W. Wisconsin Ave., Zone 3, plans by Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, Minn., hospital addns. $1,570,000. CD 1/26/50.

Alaska, Juneau—HOSPITAL—St. Ann's Hospital, Juneau, 4 story hospital addn. $500,000.

Ont., Copper Cliff—HOUSING—International Nickel Co. of Canada Ltd., Copper Cliff, 110 housing units in Lively area of Creighton townsite. Approx. $700,000. CD 3/18/47.

▲ Ont. Waterloo—HOUSING—Syndicate of Peter Wall, R. K. Ross, etc., St. Catherines, 400 housing units bungalows in Glenacres Sub-division, Dower St. area $3,500,000.

Que., Magog—HOSPITAL—Hospital La Providence, Magog, hospital addn. $500,000.

INDUSTRIAL BUILDINGS

Ala., Birmingham—PLANT—Birmingham Paper Co. 500 S. 22 St., plant addns. $500,000.

▲ Calif., Riverside—PLANT—Rohr Aircraft Co., foot of H St., Chula Vista, constr. aircraft plant, $2,013,283.

▲ Ga., Elijah—PLANT—Peerless Textiles, Inc., Elijah, plant. Approx. $1,000,000.

Ill., Des Plaines—LABORATORY—U. S. Gypsum Co., 300 W. Adams St., Chicago, 6, Ill., plans by Shaw, Metz & Dolio, 208 S. La Salle St., Chicago, 4, Ill., laboratory, Northwest Highway, $800,000. (Correction—location of project). CD 5/2, under Ill., Des Moines.

▲ Ill., North Chicago—PLANT—Abbott Laboratories, 1400 Sheridan Rd., first unit, 300,000 sq. ft. plant, 43 acres west of North Chicago on Chicago and Northwestern R. R. at Buckley, $4,000,000. CD 11/1/49.

▲ Ind., Indianapolis—FACTORY—Cold Metal Products Co., 45 Montgomery St. S., Youngstown, factory on 40-acre site, near here, $3,700,000. CD 4/11/52.

▲ O., Cincinnati—PLANT—Emery Industries, Inc., Carew Tower, Cincinnati, plans by Frankenberger, Junker & Lensky, engrs.-archts., Vernon Pl., Ell-shaped structure, 3 units, 2 story bldg., 40x60 ft., 1 story, 20x40 ft., and 40x80 ft. warehouse, 4900 Este Ave. $2,000,000. Erwin Emmer, c/o owner, dir. of Engr. CD 3/31.

▲ O., Circleville—FACTORY—E. I. du Pont de Nemours & Co., duPont Bldg., Wilmington, Del., factory south of here, along Scioto River.

▲ O., Cleveland—FACTORY—Cleveland Cap Screw Co., 2917 E. 79 St., plans by H. M. Morse & Co., 3334 Prospect Ave., 300,000 sq. ft., factory near Lee Rd. and Miles Ave. $3,000,000.

▲ Tex., Beaumont—PLANT—Gulf States Utilities Co., 362 Liberty St., synthetic ammonia plant. $16,500,000.

▲ Tex., Freeport—PLANT EXPANSION—Dow Chemical Co., Freeport, expansion of plants. $5,000,000.

▲ Tex., Houston—PLANT—Consolidated Chemical Industries, Inc., M. Esperson Bldg., expansion of sulphuric acid production plant. $6,000,000.

▲ Ont., Chatham—ELEVATOR, PLANT, etc.—Victory Mills Ltd., 285 Fleet St. E., Toronto, 1,000,000 bu. soybean elevator and 200-300 ton extraction plant on 83-acre site. $1,000,000.

▲ Ont., Niagara Falls—PLANT—Noranda Mines Ltd., 44 King St. W., Toronto, plant unit to produce sulphur and high grade ores for steel companies, $4,000,000.

▲ Que., Lachine—FOUNDRY, etc.—Dominion Engineering Works Ltd., First Ave., foundry and equipment for foundry and iron foundry. Approx. $3,000,000.

UNCLASSIFIED

Arkansas—TRANSMISSION LINES—Woodruff Electric Co-operative Corp., Forrest City, transmission lines, Ark.-15, Forrest City, St. Francis Co. $825,000. Allen & Hoshall, 65 McCall Pl., Memphis, Tenn., consult. engrs. CD 7/5/50.

▲ O., Columbus—SPORTS ARENA—Owner, c/o Harry T. Roderick, archt., 12 N. 3 St., rein.-con. Columbus Sports Arena, 65 ft. high, to seat 5,200-5,400 at ice show or hockey, 7,000 at basketball, boxing, etc., incl. 2 floors underground to park 500-600 autos. $2,500,000.

▲ Texas and Louisiana—GAS PIPE LINE—Texas Eastern Transmission Corp., Texas Eastern Bldg., Shreveport, La., 315 mi. natural gas pipe line from Provident City, Tex., to Castor, La. $25,943,079. CD 3/6/50.

▲ West Virginia and Virginia—NATURAL GAS LINE—Hope Natural Gas Co., Clarksburg, W. Va., 33 mi. natural gas line from Wyoming Co., W. Va., to point in Buchanan Co., Va. $1,165,000.

You can do more work per day—more days per year. When conversions and conventional trucks must stay home, you'll be on the job as usual. That's because...

this light-duty Model LD is a true 4x4!

Pays out on smooth highway, too! For general hauling or patrol work, the LD is a growing, economical favorite.

The LD licks a lot of snow and ice faster. Drivers like its easier, safer handling . . . its speed and maneuverability.

Here's one truck you can depend on to give you service, any time of the year. Whether it's at the start of the spring breakup, when rains keep heavier equipment in the garage, or after a winter snow-fall, you can always send an LD out on the job.

The LD is the only truck in the 14,500 g.v.w. work range that offers the full traction, safety and economy of *true, balanced* four wheel drive. Get the facts from your FWD distributor or THE FOUR WHEEL DRIVE AUTO CO., Clintonville, Wisconsin, and Kitchener, Ontario.

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You buy more than a truck when you buy an FWD

You get extra-traction and proper distribution of weight and power *Plus*:

- Ability to work more days per year
- Ability to handle more jobs
- Ability to travel easily and safely on or off the highway
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CRESCENT SCRAPER

Step up the yardage you move and cut your costs at the same time by using a Sauerman Crescent Scraper on jobs where material has to be dug and hauled distances of 200, 500, to 1,000 ft. or more.

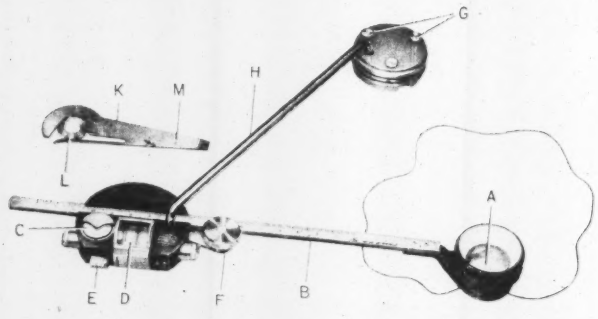
The unique Crescent bottomless scraper digs effectively in any kind of loose material, handles heaping loads faster and requires less power per cubic yard handled than other types of scrapers.

Picture shows design of the 1/3, ½ and ¾ cu. yd. sizes of Crescents for handling heavy materials. There are twelve other sizes, made in five different models.

Write today for Catalog J

SAUERMAN BROS., Inc.
532 S. Clinton St. Chicago 7, Ill.

NEW PRODUCTS



Optical planimeter features (A, B) tracing lens and arm, (C, D) counting and measuring wheels, (E) zero-set control, (F) roll button, (G) pole block fasteners, (H) polar arm, (K, L) checking gage and center pin, (M) projecting pin for tracing lens.

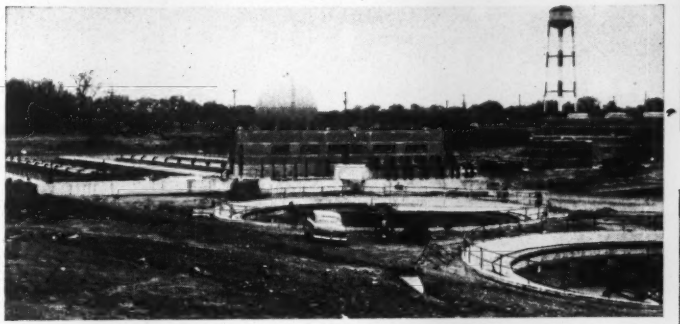
New optical planimeter simplifies area measurements

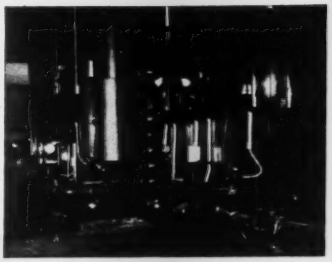
Many years ago Webster defined a planimeter as "an instrument for measuring the area of any plane figure by passing a tracer round the boundary line." Neither Webster nor the many surveyors and engineers who have used planimeters since could foresee the modifications now available in the new Optical Planimeter known as the F/S Model 236/V. Available through the same company that recently introduced an outstanding optical transit. (ENR Nov 22 '51 p. 92) the instrument is of tremendous value in determining capacities of water basins or artificial reservoirs from topographic maps, calculating earth movements, computing areas and volumes of arable lands, ascertaining water flow, analyzing recording apparatus diagrams.

The tracing point used on most planimeters has been replaced by a large bi-convex tracing lens with a small hole in the center serving as tracing point. It's firmly attached to the tracer arm and its construction is such that it magnifies the line to be followed and eliminates all parallax errors. The counting and measuring wheels can be reset to zero by simply flicking a zero-set control. (On older types a starting value was recorded first, and later subtracted from a final reading to determine a given area measurement. The only alternative was to manually turn the wheels to zero at the start of each measurement.) The tracer arm length is graduated from 6 to 22 thousandths of a square inch per vernier unit, and may be readily adjusted with a roll button. Thus, if the arm is set to 15, each vernier unit will represent .015 sq in. of map area.

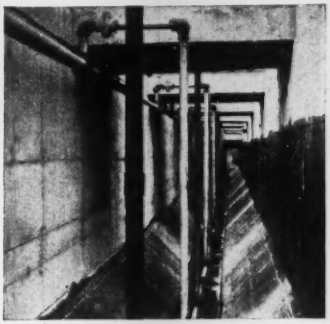
The measuring wheel is almost totally enclosed to maintain dust-free, high precision, and is visible through and magnified by a plexiglas window. The pole block can be fastened by pressing three anchoring pins into a drawing board. Each end of the polar arm has a spherical joint, resting in conical seats in the pole block and measuring carriage; thus it may be removed and replaced readily. A checking gage is supplied to assure accuracy and correct operation of the planimeter. A small disc is secured to the drawing board and the enlarged end of the gage placed over it as above. A small projecting pin exactly fits into the guide hole of the tracing lens, placed at exactly the right distance from the center that a complete turn of the gage gives a reading of exactly 10 sq in. From this precisely known area and its resultant wheel reading, the exact true setting of the tracer arm can be easily computed at any time. Manufactured by Filotechnica Salmoiraghi of Milan, Italy, the U.S. representative is TRANS GLOBAL COMPANY, 1474 BROADWAY, NEW YORK 36, NEW YORK.

In Lansing, Michigan's sewage disposal plant additions . . .





Byers Wrought Iron gas lines leading to pressure regulators for the heating units



Byers Wrought Iron pipe installed in influent aeration tunnel

Byers Wrought Iron Pipe

helps check maintenance and repair

When Lansing, Michigan, constructed its new sewage disposal plant additions, the sound policy of building for permanence was followed. To forestall excessive maintenance and repair, the engineers used a time-tried material —Byers Wrought Iron pipe—for steam heating lines, hot water circulating lines, gas lines, and exhaust lines for engines. Engineers for the project were Drury, McNamee & Porter; piping contractor was J. M. Foster Company.

This adds another to the impressive list of plants—old and new, large and small—where Byers Wrought Iron pipe is helping to maintain smooth production schedules, and to reduce maintenance headaches and costly repairs or replacement. In the sewage treatment plant at Salina, Kansas, for instance, this material was used to safeguard 7 vital services. And at Hyperion sewage treatment plant, Los Angeles, Byers Wrought Iron pipe was put to work in 51 services where corrosion was a threat to durability. These are only two of many installations throughout the country that indicate the confidence engineers place in the material.

Our bulletin, WROUGHT IRON FOR SEWAGE TREATMENT AND DISPOSAL INSTALLATIONS, will give you some helpful information on how to keep maintenance costs down. Write for your copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.

Why Genuine Wrought Iron Lasts

This notch-fracture test specimen illustrates the unique fibrous structure of genuine wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

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CORROSION COSTS YOU MORE THAN WROUGHT IRON

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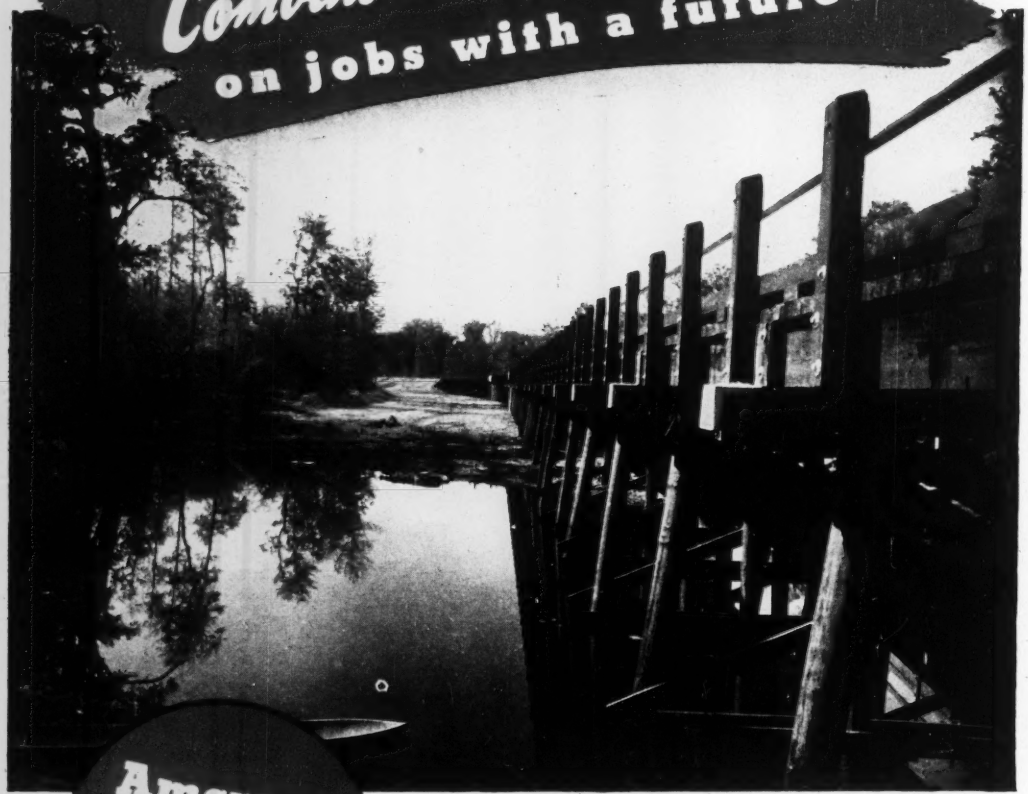
on jobs with a future...



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Amcreco Creosoted Products fit right into today's demand for beauty as well as utility in bridge projects. And the dependable, long-life of material treated by Amcreco means greater long-run economy. Amcreco treating methods are based on accepted methods improved by years of practical experience, research and development. We would like to have the opportunity to tell you more.

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AMCREO LOWRY PROCESS CREOSOTED WOOD

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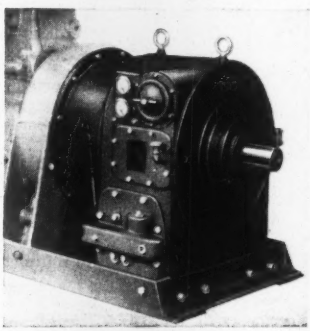
GENERAL SALES OFFICE — CHICAGO, ILLINOIS

Pressure treated for strength that lasts!

New tape is fine for service lines

The tape being wrapped around this joint is a new polyvinyl type said to possess exceptional dialectric and insulation properties. The 10 mil Dressertape has an insulation resistance of 100,000 megohms and dielectric strength of 10,000 volts. It provides effective protection against water, salt water, acids, alkalis, oil and soil chemicals. Claimed to conform readily to irregular surfaces, the tape is especially adaptable for the protection of fittings on service lines. Applied cold, it is safe for workmen to handle, even in cramped ditches. It can be backfilled immediately since it needs no setting-up period. Now offered in the 10 mil thickness, 2 in wide, it will soon be supplied in a variety of sizes to meet all pipe and pipe joint requirements. DRESSER MANUFACTURING DIVISION, BRADFORD, PENNSYLVANIA.



Torcon converter has three-element torque

Latest addition to the Torcon torque converter line is Model 17-K, a single-stage, three-element type unit that combines a converter and fluid coupling in the same housing. It's rated to provide automatic power transmission for heavy equipment, including logging machinery, materials handling

MIR-O-COL

does a better job of hard facing —or your MONEY BACK!*

*Try a 10-lb. box on your job. If not 100% satisfied, return unused contents of box. Supplier will refund full price. This unusual offer is our way of *showing* you what we mean by MIR-O-COL *high quality* and superior performance. You'll see *why* MIR-O-COL is *preferred by experts!* (Offer good only in U.S.A.)

There's the right type of MIR-O-COL rod for every hard facing job.

Ask your supplier for MIR-O-COL!

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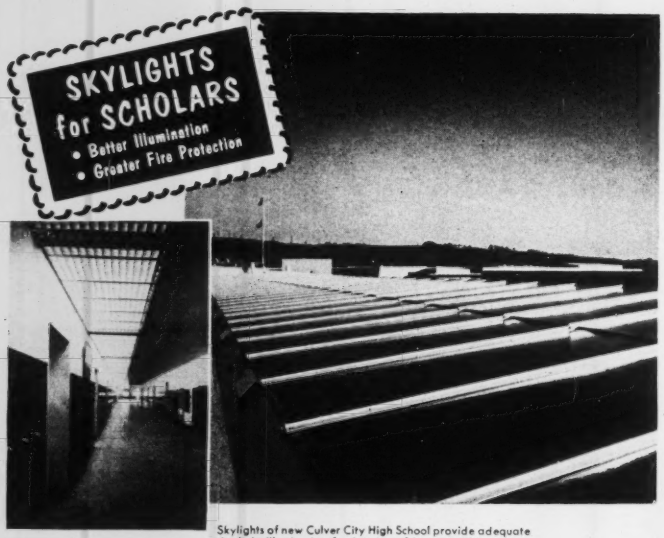

Skylights of new Culver City High School provide adequate daylight illumination for interior of large building.

COOLITE GLASS HELPS GUARD YOUNG EYES

Eye fatigue is an enemy of education. School children must be provided with high levels of quality illumination. In the modern Culver City High School, approximately 30,000 square feet of Hammered Coolite Wire Glass by Mississippi was installed in skylights which flood the entire interior with glare-free, controlled daylight for easier seeing. The texture and delicate blue-green tint of Coolite transmute raw sunlight into softly diffused and conditioned illumination. The innate strength of this famous wire glass by Mississippi adds structural endurance, reduces danger from breakage. Hammered Coolite Wire Glass helps retard effects of dangerous fires, provides increased safety for occupants. It tends to "bottle up" and smother small conflagrations before they can spread to tragic proportions.*

Study the use of Coolite for school buildings. Its superior qualities suggest its use in modern school architecture. Mississippi Glass Company conducts continuous experiments in daylighting research in its model schoolhouse. Specify Mississippi Glass and make daylight a part of your plan.

Translucent figured and wired glass by Mississippi for better daylight illumination is available in a wide variety of patterns and surface finishes all scientifically designed to distribute light to best advantage. Send today for free literature and samples.

*Approved Fire Retardant No. 32

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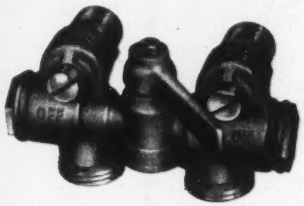
devices, shovels and cranes. It has variable torque ratios up to 3:1. At zero output speed the torque multiplication is highest, gradually decreasing as output speeds increase, until output and input are equal. When torque ratio reaches 1:1, the reaction member is free-wheeled and the unit acts as an ordinary hydraulic coupling. In this coupling range output speed increases in nearly direct proportion to engine speeds. It uses standard SAE 10 motor oil and incorporates built-in oil filter, temperature and pressure gages. THE TORCON CORPORATION, 1194 WEST FIFTH STREET, ASHTABULA, OHIO.



Valve prevents bursting of water hoses

Any plumber will tell you that the ordinary hose bibs were never made to withstand constant pressures. The new Symmons Duplex Protector is a valve specifically designed for use with dual hoses. A simple flick of the finger completely shuts out both hot and cold water by means of a single small lever-type handle. On a setup providing water to a plaster or concrete mixer, for instance, pressures may readily be removed from hoses in between mixing operations. The new valve is actually two valves in one unit. It inserts in a double line (or a hot and cold supply line) at the take-off between the hoses and the lines themselves. Available with male-union connections to take standard threaded ½-in. I.P.S. fittings or with ½-in. sweat union ell connections complete with wall support, they prevent dripping and completely remove all pressure from both hoses when machines are idle. Off and on positions are clearly indicated. SYMMONS ENGINEERING COMPANY, BOSTON, MASS.

Test kit diagnoses GM diesel engine troubles

Any mechanic responsible for diagnosing trouble or making preventive maintenance checks on GM diesels will be

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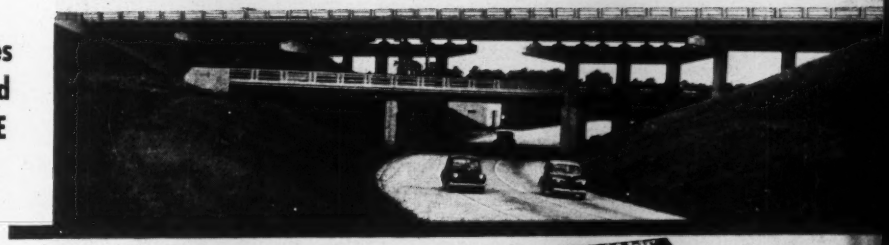
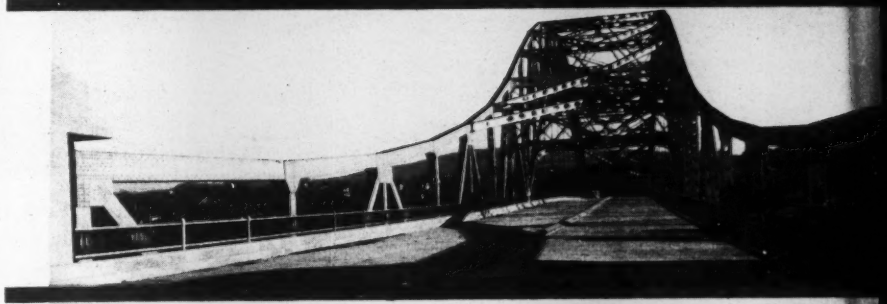
- Congress Street Bridge, Troy, N.Y.
- Delaware, Lackawanna & Western Railroad
- Elizabeth Bridge, Elizabeth, Pa.
- Fairmont Boulevard Bridge, Cuyahoga County, Ohio
- Glassport-Clairton Bridge Allegheny County, Pa.
- McKees Rocks Bridge, Allegheny County, Pa.
- Neches River Bridge, Port Arthur, Texas
- New York, Chicago and St. Louis Railway Company
- Patrick Street Bridge, Kanawha County, W. Va.
- Pennsylvania Railroad
- Pennsylvania Turnpike
- Sixth Street Viaduct, City of Cincinnati, Ohio
- Thirty-first Street Bridge, Allegheny County, Pa.
- Tri Level Grade Separation, Willow Run, Michigan
- Wells Street Bridge, City of Chicago, Illinois





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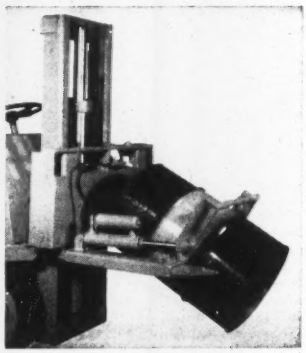

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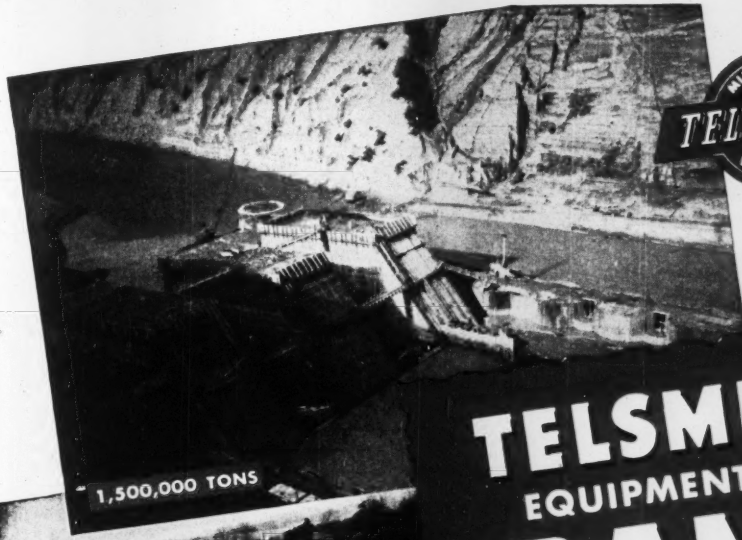
(*Products continued on page 144*)



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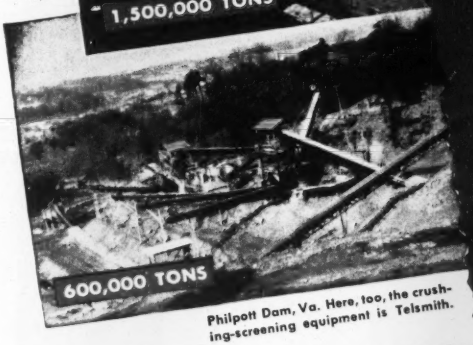

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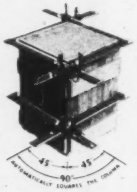

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A chest-mounted faceshield designed by the Research Laboratories of Mine Safety Appliances Company, Pittsburgh 8, Pa. is comfortably supported by easily adjusted neck and chest straps which provide balanced weight distribution. A soft pliable leather pad rests on the chest without pressure or binding. Improved vision, elimination of dead air space, and relief from binding discomforts are just a few of the advantages attributed to this new protective faceshield assembly. The standard model is supplied with a clear Chipruf visor. Other visors available are the Chempruf for chemical splashes, and a metal screen visor for hot operations.

Personal safety equipment (faceshields, respirators, ear defenders) **can be cleaned** and sanitized thoroughly and quickly with MSA Cleaner-Sanatizer, according to the manufacturer, **Mine Safety Appliances Co., Pittsburgh 8, Pa.** It's a dry powder in 1-oz envelopes. Users simply add contents of an envelope to a gallon of luke warm water. Equipment is cleaned, rinsed and allowed to air-dry; no soap film remains and the equipment is thoroughly clean with bacterial count reduced to levels judged safe by public health standards.

A positive-action belt-trainer that automatically keeps wandering conveyor belts aligned is now being manufactured by the **Rapids-Standard Co. Inc., Grand Rapids, Michigan.** The new device eliminates downtime, wear and excessive maintenance costs. It can be put on any make conveyor that has its return belt exposed under the bed, and doesn't interfere with normal operation.

The Clayton & Lambert Mfg. Co., Louisville 10, Kentucky announces production of new blowtorches capable of using either leaded or non-leaded gas as fuel. Announcement of use of the leaded gas in the company's CL-32A-1 or 600A-1 torch was held up until successful field tests were established.

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• **Fans and blowers**—Specification, dimensions, installation diagrams and product photographs of 30 fan types in over 300 sizes are described in this 30-page catalog printed in two colors. A price list and engineering bulletin as well as extensive information on selection and installation of fans for every use are listed. CHELSEA FAN & BLOWER CO. INC., PLAINFIELD, N. Y.

• **Clay products.** This pocket-size catalog includes plus and minus discount schedules, list prices for sewer fittings and recently developed clay products. There's variety of fittings illustrated in color in the 91-page ring-bound midget published by UNIVERSAL SEWER PIPE CORP., CLEVELAND, OHIO.

• **Beautiful woods for beautiful homes**—In full color, this 19-page brochure contains ideas and illustrations for do-it-yourself installations of weldwood hardwood plywood, flush doors, striated weldtex and plankweld—the wood paneled room that comes in a package. UNITED STATES PLYWOOD CORP., 55 WEST 44TH, NEW YORK 18, N. Y.

• **Reference manual**—Listing of 800 building materials and industrial products obtained from asbestos, asphalt and magnesia is contained in this new manual by the Philip Carey Company. The book shows army, navy, MIL, federal, ASTM and other specifications along with their corresponding product. All information is cross-indexed for easy reference. PHILIP CAREY MFG. COMPANY, DEPT. FRM, CINCINNATI 15, OHIO.

• **What's a silicone?**—Dow Corning's new 32-page booklet answers this oft-asked question in terms of what silicone does. The widely varied uses of silicone products are listed and further emphasized by illustrations and graps. DOW CORNING CORP., MIDLAND, MICH.

• **Shoring**—Methods of use of Safway shoring to support scaffolding work, and particularly to ease close decking are discussed in a four-page folder. Specifications of the product, advantages of its use, drawings showing installations and bracing systems are included. The product is said to have the advantage of one-man operation, requiring no mailing, being adjustable to exact required heights. SAFWAY STEEL PRODUCTS, INC., W. STATE ST. AT N. 63RD ST., MILWAUKEE 13, WIS.

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EDITORIALS

The public housing question

THE BATTLE OF THE LOBBYS is on in Washington to influence Congressional action on next year's Public Housing Administration program in which a cut to 5,000 units has been proposed by a House of Representatives committee. As an indication of how deep this cut is, the National Housing Conference, meeting in Washington last week, urged that 135,000 units be provided for in appropriations.

Such a cut would obviously affect the business of many engineers, contractors and manufacturers, so it is important to be clear on the issues involved.

The battle cry of those favoring the cut is "socialization," although strangely enough the real estate and home building interests that voice it have already been rather well socialized by the government guarantees on private housing; and so far as any statements to the contrary have been made, this government aid has not been unwelcome. Fear of competition from public housing is probably a more accurate description of their concern, and here it would seem that the home builders, at least, are not being realistic.

While public housing can logically be opposed as favoring a few with rent subsidies paid for by the many —certainly a form of socialization—lobbyists as a rule are not concerned with such high moral question. Their concern is with the selfish interests of their clients, and the interests of home builders would seem to lie in the direction of more housing regardless of whether it is public or private.

In any event, it can hardly be argued that socialization has yet threatened either the designing or the building of public housing. As in other types of public works, these functions are carried out by private enterprise. Moreover, the bonds for financing public housing are usually sold through private investment firms to private investors. The net result is that the real-estate brokers and the mortgage bankers are about the only ones who can complain that public housing threatens to socialize or damage their businesses.

The debate on public housing should really go back to the issues that introduced the subject a couple of decades ago. Is it the best or the only possible way to provide decent housing for the low income groups? Is it a necessary device for clearing slums and removing blighted areas in our cities? Do its benefits exceed its cost to the community? Is public housing a federal matter or should it be left to the cities and the states?

In the years since such questions were first raised, subsidized public housing projects have been built in many cities. This has provided a large amount of experience, not previously available, upon which answers to the questions can now be based. Moreover, for comparison, there is the recent experience with privately financed housing put up under the new urban redevelopment laws, which confine public participation to providing low-cost land. Ample background, therefore, is available for an informative debate.

In the meantime, the current issue in Washington is not apt to be settled on either of the extremes that are being advanced. Neither the budget nor the materials situation will support a 135,000-unit program. A cut to 5,000 units amounts to a repudiation of existing federal public housing principles, which is not in the cards. The best present guess is that approval will be given for maybe 40,000 units—and that the question of whether public housing is good or bad will be back again before the next Congress. Someday that question must be answered.

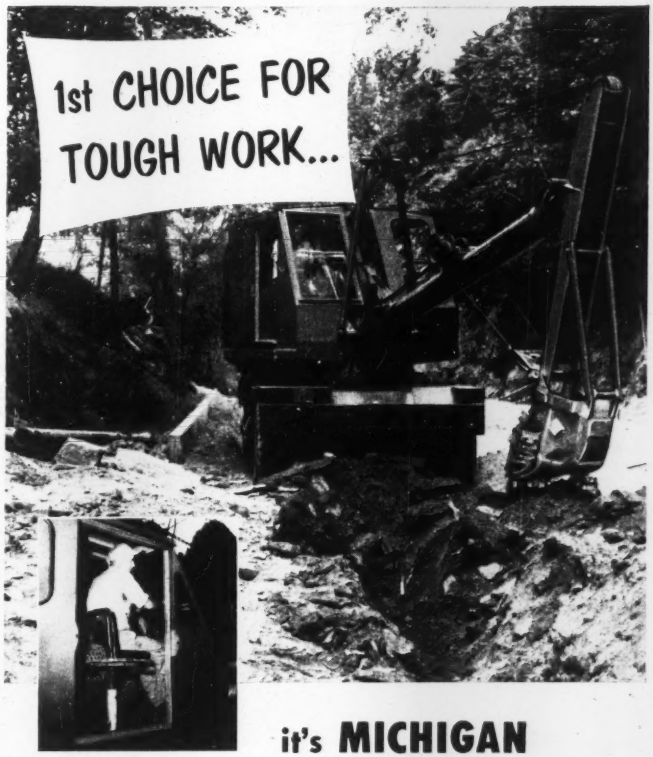
The "Brass Curtain"

CONDITIONS that keep top executives in engineering organizations from having a full understanding of the economic problems of engineers much farther down on the payroll are characterized as a "brass curtain" in a publication called "Conference Notes" put out by the Conference of Professional Technical Personnel of the Bell Laboratories at Summit, N. J.

To some people, that characterization may appear to have unfortunate implications. Nevertheless, it does serve to draw attention to a very definite division within the profession that is the source of many of the profession's internal difficulties. The same publication, in comment on the "unity plans" that were put forward last year, notes that no one of them makes any provision for representation on the unity organization for associations such as this Conference, associations that are concerned chiefly with questions of pay and working conditions of engineering employees.

While that is true, if we can predict the future in the light of the record of Engineers' Joint Council, lack of such representation does not necessarily mean that a brass curtain will keep the directors of a unity organization from acting on matters of pay for engineering employees. Within recent months, for example, EJC urged the Salary Stabilization Board to act to correct an inequity in its regulations that affected the pay of many engineers.

Engineers who are advanced to positions of management inevitably will look at questions relating to pay for engineering employees from management's point of view. But such a situation does not mean that their consideration of pay questions will be unfair or inequitable. That depends on the individual, not on his position in relation to the brass curtain. If the right type of men head up the unity organization, the fact that they speak from the management side could give added weight to their statements in support of the employees' stand on pay questions with such agencies as the Salary or Wage Stabilization Boards.



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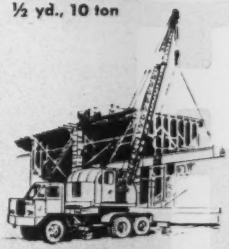
Model T6K
⅜ yd., 6 ton

Model TMDT-16
½ yd., 10 ton



Model TLDT-20
12 ton

Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

If you want all this in a tapered roller bearing . . .

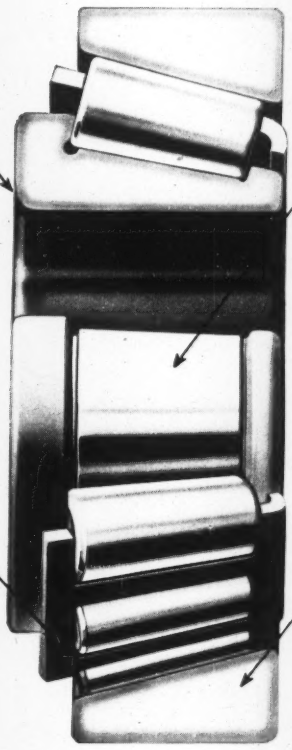
1 **GENEROUS RADIUS** — for greater shaft strength.

2 **CHOICE OF 26 DIFFERENT TYPES.**

3 **SOFT STEEL CAGE** — to keep rollers separate and prevent scuffing.

4 **PRECISION MANUFACTURE** — which makes possible bearings with a maximum runout tolerance of less than 75 millionths of an inch.

5 **CASE-HARDENED BEARING SURFACES** — to resist wear.



6 **MICRO-INCH SURFACE FINISH** — to minimize friction.

7 **CHOICE OF 5850 SIZES.**

8 **TIMKEN FINE ALLOY STEEL** — specially developed to give long bearing life.

9 **TOUGH CORE** — to resist shock.

10 **POSITIVE ROLLER ALIGNMENT** — to prevent skewing and give maximum capacity.

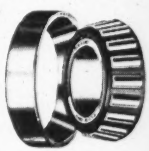
. . . the tapered roller bearing you want is TIMKEN®

TIMKEN® tapered roller bearings give you more advantages than any other make. Ten of these advantages are listed above. They result from the fact that the Timken Company is the foremost producer of tapered roller bearings and leads in 1) advanced design, 2) precision manufacture, 3) rigid quality control, and 4) special analysis steels.

Be sure every tapered roller bearing you use carries the name "Timken", the trade-mark of The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".

TIMKEN

TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION